Agenda

• Canada
• Colombia
• Mexico
• Spain
• Thailand
• Tunisia
Canada

• Development of **Mini Case Studies** (French, English)
  – Canadian Bank
  – Large Utility Provider
  – Public Transportation Enterprise using the Systems engineering Basic Profile
  – Canadian/Tunisian IT Start-up
  – Metam *
  – Large Canadian Division of an American Engineering Company
  – Tetra Tech

• Training sessions, Workshop and Meetings in Mexico*
Systems Engineering and Management Processes for Small Organizations with ISO/IEC 29110

An implementation in a Small Public Transportation Company

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Abstract: Most existing systems and software engineering standards, such as ISO/IEC/IEEE 12207 and ISO/IEC/IEEE 15288, have been developed by and for large organizations not having to deal with small and very small entities. As systems are getting bigger, customers as well as systems integrators must work with small suppliers. The new systems and software ISO/IEC 29110 series can be used by small entities such as enterprises or projects within a large organization to develop quality products. CST, a small public transportation company, has implemented the engineering and management processes of ISO/IEC 29110 and has recently been successfully audited by a third-party audit composed of 2 auditors. ISO/IEC 29110 was also implemented in CST as a good starting point towards implementing CMDB/SWIP level 2 process areas and a few practices of Level 3.

Keywords—systems engineering, software engineering, ISO/IEC 29110, standards, Very Small Entities, VSE, process, management and engineering guide, CMDB

1. INTRODUCTION

CST is a Canadian company, established in 2011 in Montreal, providing multi-modal integrated Communications Systems and information integration for transport. In transit industry, customers often require a CMDB/SWIP [1] maturity level from their suppliers. An independent evaluation...

• The Education of Students About Software Engineering Standards and Their Implementations in Very Small Entities.

• Laporte, C. Y., Munoz, M., Gerançon, B.,


IHTC 2017 conference will focus on humanitarian applications of technologies, aligning with Sustainable Development Goals of the United Nation: Mainly, sustainable development of communities, health, disaster mitigation and management; and engineering education with an emphasis on humanitarian issues.

http://www.ihtc2017.ieee.ca
Members of WG
Introduction
Survey of VSEs
Network of Centers
Generic Profiles
Systems engineering
Software engineering
Deployment Packages
Pilot Projects
Mini Case Studies
Education DPs
Publications
Certification
Service Delivery

http://profs.logti.etsmtl.ca/claporte/English/VSE/index.html
• Canadian/Tunisian VSE
  – Founded in 2013
• In 2017, (20 employees):
  • 18 employees in Tunisia
• Audited, by a third-party auditor, in 2016 (annual surveillance audits)
• Aiming to get CMMI L 2, late 2018
• Mini Case Studies
  – English, French
• Short videos
  – 4-minute
  – English, French

Metam Solutions is a company founded in 2013. The company has one site in Canada and one site in Tunisia. Its business domains are software development services, web solutions, mobile applications as well as consulting services to implement VSE solutions. The Basic profile of ISO 29110 was used as a framework for the company’s software processes. It was also used as a foundation to implement CMMI-DEV Level 2 practices because it is requested by some military contracts. In Fall 2016, the VSE was successfully audited by a third-party auditor against the Basic profile of ISO/IEC 29110. Metam has 20 employees in 2017.

The VSE and its Environment
Metam Solutions is a start-up company of professional services offering software development services, ERP (Enterprise Resource Planning) and CRM (Customer Relationship Management) implementation services, and strategic IT consulting services.

The company was founded in 2013. In 2017, it had 20 employees in Montreal, Canada and Tunis, Tunisia. The company is divided into two legal entities: Metam Solutions Corp. and Metam Tunisia SARL. In addition to offering its services in Tunisia, Metam Tunisia serves as a subcontractor for the projects that Metam Solutions carries out in North America.

Starting Point
Since Metam Solutions was a start-up, it had not yet implemented a process. The company mainly used the processes of its customers for the delivery of projects. At the start of the implementation of ISO 29110 at Metam Solutions, no documented process was in place.

The Improvement Project
To help its growth and to distinguish itself in the market, to improve its performance and to deliver quality products and services, the VSE aims at putting in place CMMI® for Development Level 2 practices in the next 5 years. In order to achieve a CMMI® Level 2, Metam Solutions set itself the goal of implementing the Basic profile of ISO 29110 as a foundation. Thus, enabling Metam to master the project management and the software implementation processes and to continue, in a second step, the implementation of CMMI® Level 2 practices.

The objectives of Metam Solutions were:
- Implement the two processes of the Basic profile of ISO 29110.

http://metam.ca/
Colombia

- Government launched in March 2017 a program to support the implementation and certification of about 110 enterprises to the Basic profile

- The program has a budget of 1.155 M$
  - ISO 29110 support, implementation and certification

- Maximum of 12,250 US$ per enterprise

- About 85% will be financed by the government program and 15% by the enterprise

France

- A 70-page booklet, in French, about Systems Engineering for small organizations
France

PISOC: a Process Oriented Systems Engineering Improvement Project for SMEs

**PISOC Project** (Pilote IS en Occitanie).

A **18 months pilot project** initiated by AFIS to improve the SME competitiveness, according to their business objectives through Systems Engineering process maturity.

**Key Figures:**

- SE process reference: as the initiative taken by the SE community to define an SE repository dedicated to VSE is seen as a real opportunity by the French small and medium companies, we are evaluating how the **ISO 29110 Basic profile** could cope to their needs (taking into account that AFIS is also part of the study group “JTC1/SC7/SG - Evolution of the VSE Stds”)

- Improvement Plan based on CMMI® incremental appraisal process.


- A 1st step with **4 pilot** SMEs (11 candidates) in 4 different areas:
  - aeronautics, nuclear, agriculture, space. Potential candidate in Health domain

- Co-funded by AFIS and regional office of Ministry of Labor and Employment

- Contact: [stephane.galinier@thinklink.fr](mailto:stephane.galinier@thinklink.fr)
Mexico
### Certified companies in Latin America

#### Certificates issued in Latin America

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www.nyce.org.mx
Mexico

• State of Zacatecas
  – ISO 29110 activities organized by the Secretariat of Economy and the Software Engineering Division of CIMAT (Centro de Investigación en Matemáticas)

• ISO 29110 Presentations - February
  – Introduction to ISO/IEC 29110 Series
  – Challenges and Realities of ISO/IEC 29110
  – Success cases of the implementation of ISO/IEC 29110 in VSEs
  – How to teach ISO 29110 to undergraduate and graduate students

• ISO 29110 Workshop - February
  – Development of a software for a Rice Cooker using the 2 processes of the Basic Profile
• **State of Zacatecas**
  – 15 companies and 10 universities have attended the ISO 29110 training sessions and an ISO 29110 workshop
  
  – **Action Plan**
    
    • Following a meeting with the Secretary of Economy an ISO 29110 action plan was developed and a letter of intent was signed.
    
    • **Objective of the Action Plan**
      – Promote the competitiveness of companies and development centers in Zacatecas through the implementation and certification of the international standard ISO 29110.

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*Secretary of Economy with Mentor Honorifico*
• **Action Plan Related Activities up to May 16th**
  – An ISO 29110 committee was established
    • This committee will be in charge of monitoring the activities as well as define the next actions and or take decisions regarding the corrective actions
  – The action plan was presented and discussed
    • The goal and target we pretend to achieve
    • The roles of main stakeholders
      – e.g. CIMAT, NYCE, Zacatecas Government
  – Follow-up activities were defined, such as:
    • Get the agreement and commitment of people of the Committee
    • Sign a contract between government and industry/academia

**Next meeting on May 24th**
Mexico

- Translation in Spanish
  - Collaboration of 4 universities
    - Lead by CIMAT
  - Entry Profile and its 2 Deployment Packages:
    - Project Management
    - Software Implementation

Entry Profile will be published as a Mexican National Standard

http://profs.etsmtl.ca/claporte/English/VSE/IndexS.html
Spain - Actions

- Softwcare is currently in the accreditation process of being the first ISO/IEC 29110 certification body in Spain
- Workshops planned in three IT clusters in Spain
- Assessors training from IntRSA in the next months
- Softwcare invested on creating upto25.net (with a very small financial support from the local administration)
- Success stories
upto25.net – Governing board

The upto25 Board Executive Team is composed of:

- Patricia Rodríguez-Dapena – SOFTWCARE S.L – España (Chairman)
- Francisco López-Lora-Hinojo – TCPI – España (Vice Chairman)
- Miguel Buitrago-Botero – SEQUAL S.L – Colombia (Secretary)
- Philippe Lobjiez – SOFTWCARE S.L – España (Treasurer)

The upto25 Directors are:

- Abraham Dávila – Full Professor – Informatics Engineering – Engineering Department – Pontificia Universidad Católica del Perú – PUCP, Peru
- Salvador Sánchez – NYCE, assessment – Mexico
- Alej Borrego – Spice User Group and ARCS (IntrISA) Director
- Rory OConnor – Associate Professor of Computing at Dublin City University – Ireland
- Tanin Uthayakula – Convenor of Working Group 24 of the ISO Subcommittee 7,
- Prakitsongpol – Representative of the Federation of Thai Industries,
- Paula Angell – Informatics and Systems Director – BeLgrado University – Buenos Aires – Argentina
- Claudia González – Co-editor of both the Basic Profile for software and the Organizational Profile Guide and Mexican representative of Working Group 24 of the ISO Subcommittee 7
- Blanca Gómez – Co-editor of both the Basic Profile for software and Mexican representative in the Working Group 24 of the ISO Subcommittee 7.

Membership

The upto25 network is governed according to the Schema’s By-Laws.

The upto25 network has a membership that supports and helps to develop the Community. The Governing Board is elected from the membership.
upto25.net - VSE, assessors, Certification Bodies social network - Dashboard

You have fields in your profile unfilled. Please complete your profile

Notifications
- 1 member visited your profile
- You have 3 unread notifications

Social Network
Recent activity
- Softcare changed the name and description of the group
- new group 21 days ago

My connections
- Softcare active 8 hours, 21 minutes ago

My groups
- You have no groups.
upto25.net

Introduction

Basic profile guide

Intro of the standard – future link to 29110.org

Auto-evaluation tool
Basic Profile features 2 processes: Project Management (PM) and Software Implementation (SI).

The purpose of the Project Management process is to establish and carry out in a systematic way the tasks of the software implementation project, which allows complying with the project’s objectives in the expected quality, time and cost.

The purpose of the Software Implementation process is the systematic performance of the analysis, design, construction, integration and tests activities for new or modified software products according to the specified requirements.

Both processes are interrelated.

The PM process uses the Customer’s Statement of Work to elaborate the Project Plan during the Project Planning activity.

The PM project execution tasks record the Progress Status, analyze the initiated Change Requests and the recorded corrective
upto25.net - Guide
PM.1.2 Define the Delivery Instructions

This activity is intended to define with the Customer the Delivery Instructions of each one of the Deliverables specified in the Statement of Work.

Together with the customer and based on the deliverables defined in the Statement of Work, the Project Manager shall define the general delivery requirements (media, time, rate, etc.), the applicable releases and for each release the elements necessary for its delivery. In addition, Identify all delivered Software Components with their version information and the necessary backup and recovery procedures.

Add any other information that will ensure the correct and on-time delivery (e.g. delivery schedule, delivery alternatives, documentation, acceptance criteria, training, etc.). If you need to install the product in an operational site, define the roles and responsibilities and the detail operations required to prepare the final environment and to install the product (complementary to the Software User documentation if applicable).

The sequential ordering of the tasks to be performed for the delivery can be done now or as part of the PM1.3 tasks.

Complete the Project Plan with the information defined.

Note: the deliveries items will be controlled following the Version Control Strategy that will be defined later in the PM1.10 task.
17. Statement of Work

The Statement of Work describes the work to be done related to Software development. It details the product purpose and general Customer requirements, the scope description of what is included and what are not, the objectives of the project and the deliverables.

The PM process uses the Customer’s Statement of Work, delivered by the Customer, to elaborate the Project Plan.

Its main elements are added to the Project Plan during the planning activity (PM.1.12).

Lifecycle

The status of the Statement of Work is:

- **Reviewed**: after the first task of the PM process for information.

Templates

- [Download the template here.](#)

Examples

- [Download the example here.](#)
upto25.net - tool

You are in basic profile assessment tool Project Management

Base Practice 1

1. Is the Statement of Work reviewed? - see work product 17
   ○ Not implemented   ○ Partially implemented   ○ Implemented

Base Practice 2

2. Are the Delivery Instructions of each one of the Deliverables specified in the Statement of Work defined with the Customer?
Success stories

• Guide for success stories:
  – Focus on the benefits that the standard has contributed to your organization, comparing the before with the after. Uses the classic construction of: challenge, solution, result and lessons learned.
  – Write positively.
  – Add diagrams and figures, divide the text into columns to make the document more attractive.
  – Talk to your customers who may have benefited from your improvements.

• Different cases will be prepared in the next months
Other actions

• Specific profile for the space domain

• Papers about this Space specific profile in:
For more information, please contact:

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Action Plan for Survey of Systematic Processes for Tech Startups

Standards for Tech Startups
By Thailand WG
At VSE Network
Participants

- Tech Startups
- Private Representatives
- Government Agency
- SE researchers from Educational Units
Startup Lifecycle: Focal Process

From: A mapping study of software engineering knowledge areas in startup companies (Klotins et al., 2015)

Requirements Engineering
- Understand needs and constraints placed on a product

Startup
- Improving internal quality

Stabilization
- Expanding the team, ensuring transfer of know-how, and managing the product

Growth
- Expanding the team, ensuring transfer of know-how, and managing the product

Software Design

SE Economics -> Product Lifecycle and Portfolio Management

Software Engineering Process (Measurements & Tools)

Maturity
- Process introduction and improvement towards SMEs

WG Thailand for Tech Startups Standards
Points Discussed

– Particular systematic processes for Tech Startups self-evaluating in a scaling-up state
– Initial set of process areas to be investigated
STARTUP DEVELOPMENT PHASES - From idea to business and team to organization.

**Formation**
- Mission > Vision > Strategy
- Co-founder team formation
- What, to whom? & Why and how?

**Validation**
- Lean Startup
- Minimum Viable Product
- Validate / Iterate (or pivot)

**Growth**
- Scale Up
- Establish & Strengthen

**Ideating**
- Entrepreneurial ambition and/or potential scalable product or service idea for a big enough target market. Initial idea on how it would create value. One person or a vague team; no confirmed commitment or no right balance of skills in the team structure yet.

**Concepting**
- Defining mission and vision with initial strategy and key milestones for next few years on how to get there. Two or three entrepreneurial core co-founders with complementary skills and ownership plan. Maybe additional team members for specific roles also with ownership.

**Committing**
- Committed, skills balanced co-founding team with shared vision, values and attitude. Able to develop the initial product or service version, with committed resources, or already have initial product or service in place. Co-founders shareholder agreement (SHA) signed, including milestones, with shareholders time & money commitments, for next three years with proper vesting terms.

**Validating**
- Iterating and testing assumptions for validated solution to demonstrate initial user growth and/or revenue. Initial Key Performance Indicators (KPI's) identified. Can start to attract additional resources (money or work equity) via investments or loans for equity, interest or revenue share from future revenues.

**Scaling**
- Focus on KPI based measurable growth in users, customers and revenues and/or market traction & market share in a big or fast growing target market. Can and want to grow fast. Consider or have attracted significant funding or would be able to do so if wanted. Hiring, improving quality and implementing processes

**Establishing**
- Achieved great growth, that can be expected to continue. Easily attract financial and people resources. Depending on vision, mission and commitments, will continue to grow and often tries to culturally continue "like a startup". Founders and/or investors make exit(s) or continue with the company.
Lean Startup Lifecycle

Key Assumptions & Milestones

Every Living Organization (Business Model) has a Dynamic Mix of Novel and Routine Problems

Extremes
Uncertainty/Risk

Unpredictable Environment

ORGANIZATION

Shaping Startup

Product-Market Fit

STARTUP (Minimum Viable Product: MVP)

Problem-Solution Fit

Adaptive Startup

Novel Problems
Continuous Innovation Culture/Habit

STARTUP (“Experimentation”) Mindset

Visionary Company

Routine Problems
Continuous Improvement Culture/Habit

COMPANY (“Planning”) Mindset

Business Model Fit/Scaling

Predictable Environment

Low Uncertainty/Risk

Source: LEAN STARTUP LIFECYCLE: 5 Stages in the Evolution of Billion Dollar Startups by Rod King, 2015
WG Thailand for Tech Startups Standards
Key to be Addressed

Which are the systematic processes that can be applied by Tech Startups in order to be ready for scaling up state?
Hypothesis: How Systematic Processes assist Tech Startups being ready for Scaling-up State?

Ideation and Product Development -> Light-weighted/Agile System and Software Engineering Process

Organizational Management -> Human Resource Management
  -> Financial and physical assets management
  -> Customer Service and Support
  -> etc.
Action plan

• Survey: Particular Systematic Processes for Tech Startups

• Focal Group:
  – Tech Startups -> Systematic Process Requirements
  – Venture Capital, Unit Supporters -> Business Maturity Expectation
Timeline for 2017

- **May**: Purpose the objective of survey
- **July**: Distribute the survey
- **September**: Collect the survey
- **October**: Conclude the survey and analyse its result
- **November**: Present and discuss on the result
Acknowledgement:

Thailand WG for Tech Startup

• Pranontha Titavunno, ICT Club, The Federation of Thai Industry
• Prakit Sangpar, ICT Club, The Federation of Thai Industry
• Sujimarn Suwannaroj, Digital Economy Promotion Agency
• Wilas Chamlertwat, Founder of Budnow Co.Ltd.
• Thanwadee Sunetnanta, Faculty of Information and Communication Technology, Mahidol University
• Waraporn Jirapanthong, College of Creative Design and Entertainment Technology, Dhurakij Pundit University
• Jidtima Sunkhamani, School of Informatics, Walailak University
References


• www.startupcommons.org
Thailand

- Ten Universities are Teaching ISO 29110
  - Chiang Mai University
  - Chiang Mai Rajabhat University
  - Payap University
  - Rajamangala University of Technology Lanna
  - University of Phayao
  - Mahidol University,
  - Prince of Songkla University (Phuket),
  - Walailak University
  - Sukhothai Thammathirat Open University
  - North-Chiang Mai University

- ISO 29110-Basic Profile Certified Organizations

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• Tunisia has applied to participate to SC7
• A mirror committee consisting of academics, industry and government should be established

• **Bizerte Smart City**
  – Each worker who will have to work on the software development projects on behalf of **Bizerte Smart City** will have to demonstrate its ability to comply with the requirements of ISO/IEC 29110
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