

29110_EPF_library

hacia un cuerpo de conocimiento abierto de prácticas de desarrollo de software adecuadas para muy pequeñas organizaciones

Congreso esLibre 2019

Granada, 21 de junio de 2019

**Ismael Olea
archipámpano TIC**

@olea

<http://olea.org/diario/>
<mailto:ismael@olea.org>

Las organizaciones muy pequeñas dedicadas al desarrollo de software tienen un gran problema al querer formalizar controlar la calidad de sus prácticas. Como alternativa pragmática se ha propuesto la familia de normas ISO/IEC 29110 para resolver sus trabas.

Haciendo suyos esos fines la iniciativa **29110_EPF_library** se ha propuesto como objetivos:

- Formal modeled repository of 29110 processes and related information
- Development and tailoring framework for 29110 processes adoption
- Low adoption barriers for VSEs:
 - The open source library licensing frees from royalties or restrictive use of IP
 - Using open source tools reduces the costs of acquisition
- Open community development
- Acts as a Body of Knowledge (BoK) for 29110 related content in particular an for software and systems engineering in general

Puede consultarse una versión previa de **29110_EPF_library** en http://olea.org/tmp/Deploy-Pack-29110-EPF_library/.

Público objetivo

- Miembros activos de proyectos de desarrollo de software
- Metodólogos de la ingeniería del software
- Gente interesada en hacer las cosas bien

Primer vuelo de pruebas del Boeing B-17, 4 de junio de 1935:



fuente: [B-17 – The story behind Boeing's First Flying Fortress](#)

Primer vuelo de pruebas del Boeing B-17, 4 de junio de 1996:



RESTRICTED

APPROVED B-17F and G CHECKLIST
REVISED 3-1-44

PILOT'S DUTIES IN RED
COPILOT'S DUTIES IN BLACK

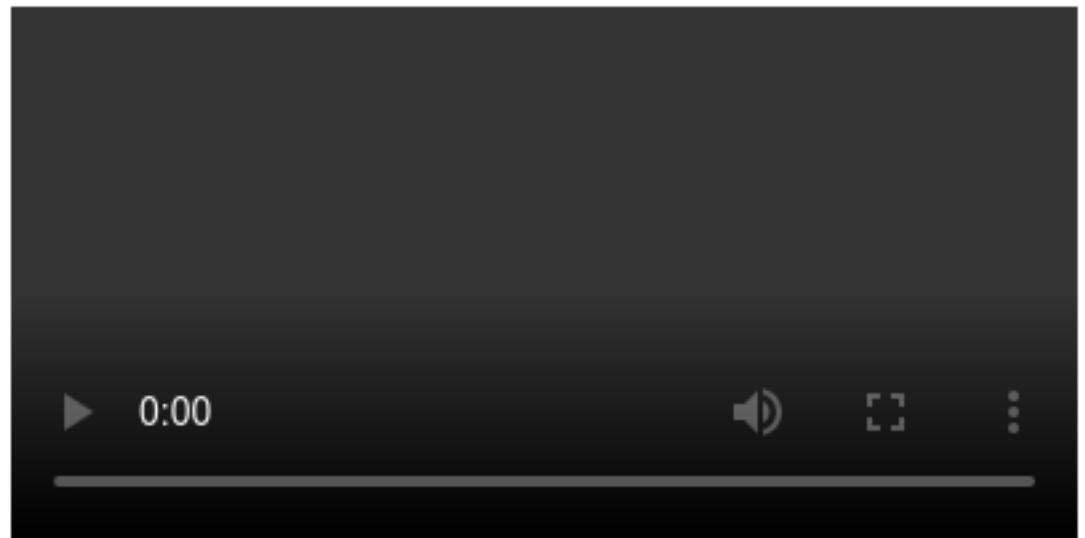
BEFORE STARTING 1. Pilot's Preflight—COMPLETE 2. Form 1A—CHECKED 3. Controls and Seats—CHECKED 4. Fuel Transfer Valves & Switch—OFF 5. Intercoolers—Cold 6. Gyros—UNCAGED 7. Fuel Shut-off Switches—OPEN 8. Gear Switch—NEUTRAL 9. Cowl Flaps—Open Right— OPEN LEFT—Locked 10. Turbos—OFF 11. Idle cut-off—CHECKED 12. Throttles—CLOSED 13. High RPM—CHECKED 14. Autopilot—OFF 15. De-icers and Anti-icers, Wing and Prop—OFF 16. Cabin Heat—OFF 17. Generators—OFF	ENGINE RUN-UP 1. Brakes—Locked 2. Trim Tabs—SET 3. Exercise Turbos and Props 4. Check Generators—CHECKED & OFF 5. Run up Engines
BEFORE TAKEOFF 1. Tailwheel—Locked 2. Gyro—Set 3. Generators—ON	AFTER TAKEOFF 1. Wheel—PILOT'S SIGNAL 2. Power Reduction 3. Cowl Flaps 4. Wheel Check—OK right—OK LEFT
BEFORE LANDING 1. Radio Call, Altimeter—SET 2. Crew Positions—OK 3. Autopilot—OFF 4. Booster Pumps—On 5. Mixture Controls—AUTO-RICH 6. Intercooler—Set 7. Carburetor Filters—Open 8. Wing De-icers—Off 9. Landing Gear a. Visual—Down Right—DOWN LEFT Tailwheel Down, Antenna in, Ball Turret Checked b. Light—OK c. Switch Off—Neutral 10. Hydraulic Pressure—OK Valve closed 11. RPM 2100—Set 12. Turbos—Set 13. Flaps $\frac{1}{2}$ — $\frac{1}{2}$ Down	STARTING ENGINES 1. Fire Guard and Call Clear—LEFT Right 2. Master Switch—ON 3. Battery switches and inverters—ON & CHECKED 4. Parking Brakes—Hydraulic Check—On— CHECKED 5. Booster Pumps—Pressure—ON & CHECKED 6. Carburetor Filters—Open 7. Fuel Quantity—Gallons per tank 8. Start Engines: both magnetos on after one revolution 9. Flight Indicator & Vacuum Pressures CHECKED 10. Radio—On 11. Check Instruments—CHECKED 12. Crew Report 13. Radio Call & Altimeter—SET
	FINAL APPROACH 14. Flaps—PILOT'S SIGNAL 15. RPM 2200—PILOT'S SIGNAL

RESTRICTED

fuente: B-17 – The story behind Boeing's First Flying Fortress

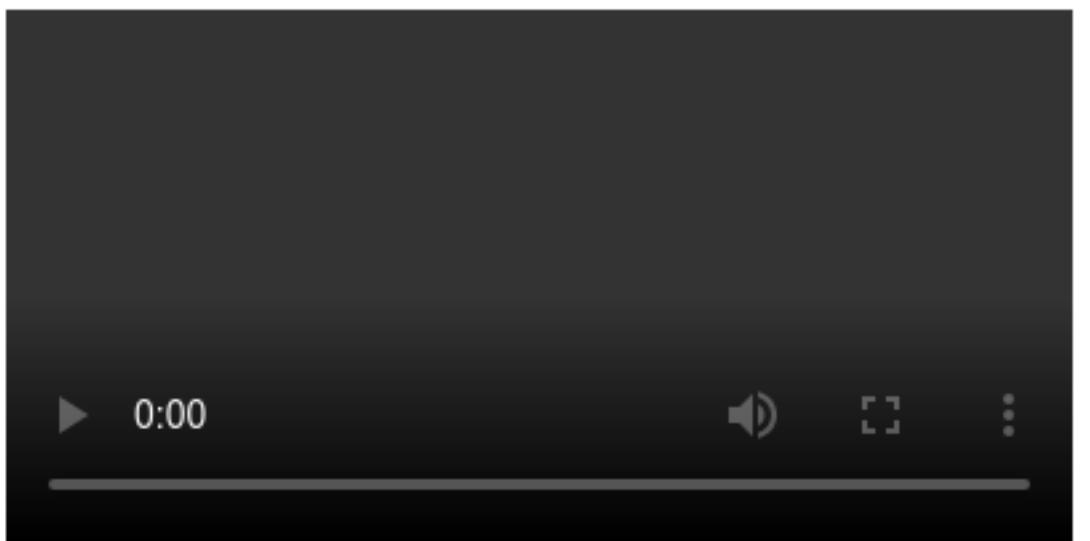
fuente: What the B17 Taught Us About Checklists

Ariane V, vuelo 501, 4 de junio de 1996:



(fuente)

Ariane V, vuelo 501, 4 de junio de 1996:



whether it was pointing up or down, which is formally known as the horizontal bias, or informally as a BH value. This value was represented by a 64-bit floating variable, which was perfectly adequate.

However, problems began to occur when the software attempted to stuff this 64-bit variable, which can represent billions of potential values, into a 16-bit integer, which can only represent 65,535 potential values. For the first few seconds of flight, the rocket's acceleration was low, so the conversion between these two values was successful. However, as the rocket's velocity increased, the 64-bit variable exceeded 65k, and became too large to fit in a 16-bit variable. It was at this point that the processor encountered an operand error, and populated the BH variable with a diagnostic value.

fuente

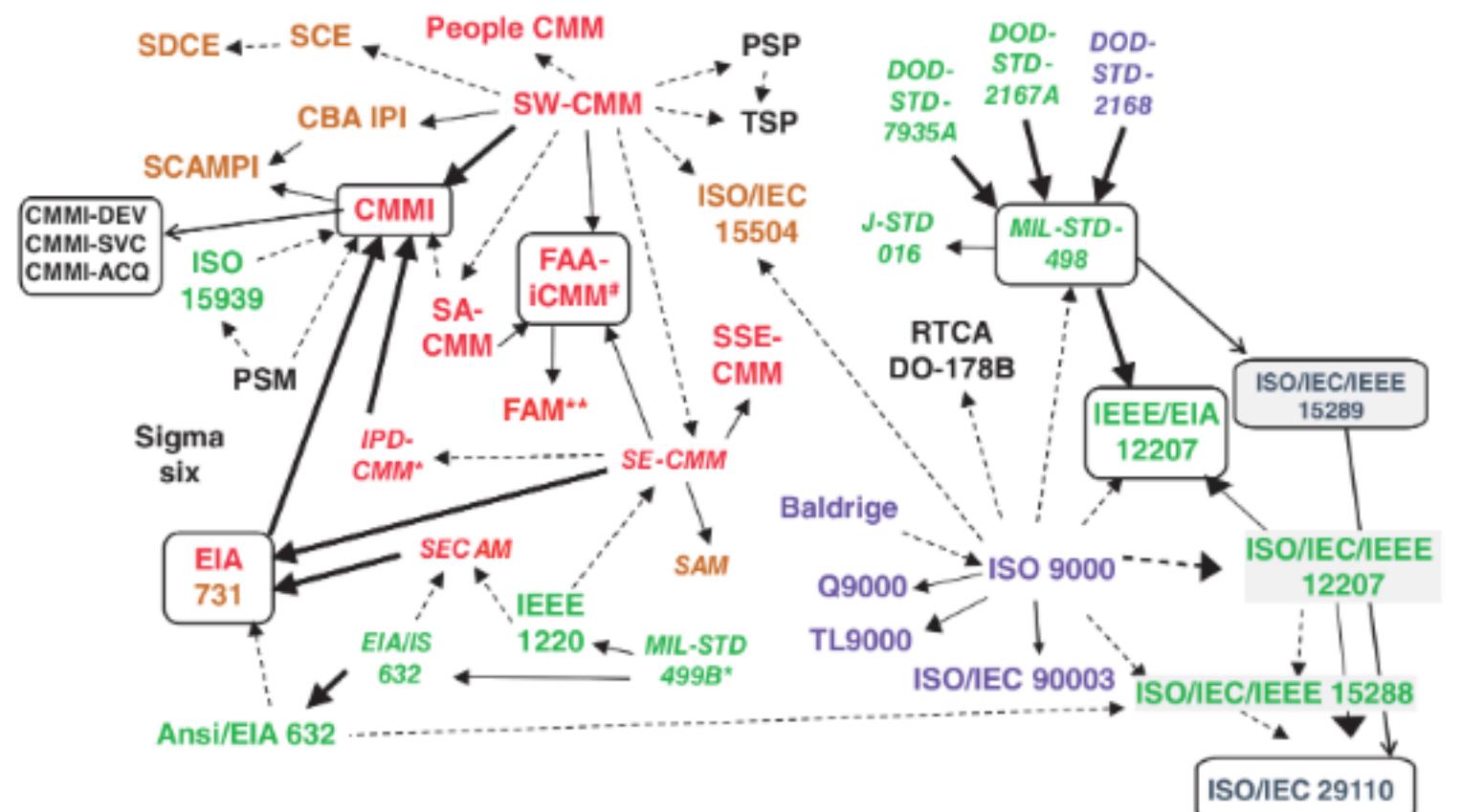
fuente: [The Worst Computer Bugs in History: The Ariane 5 Disaster](#)

software engineering:

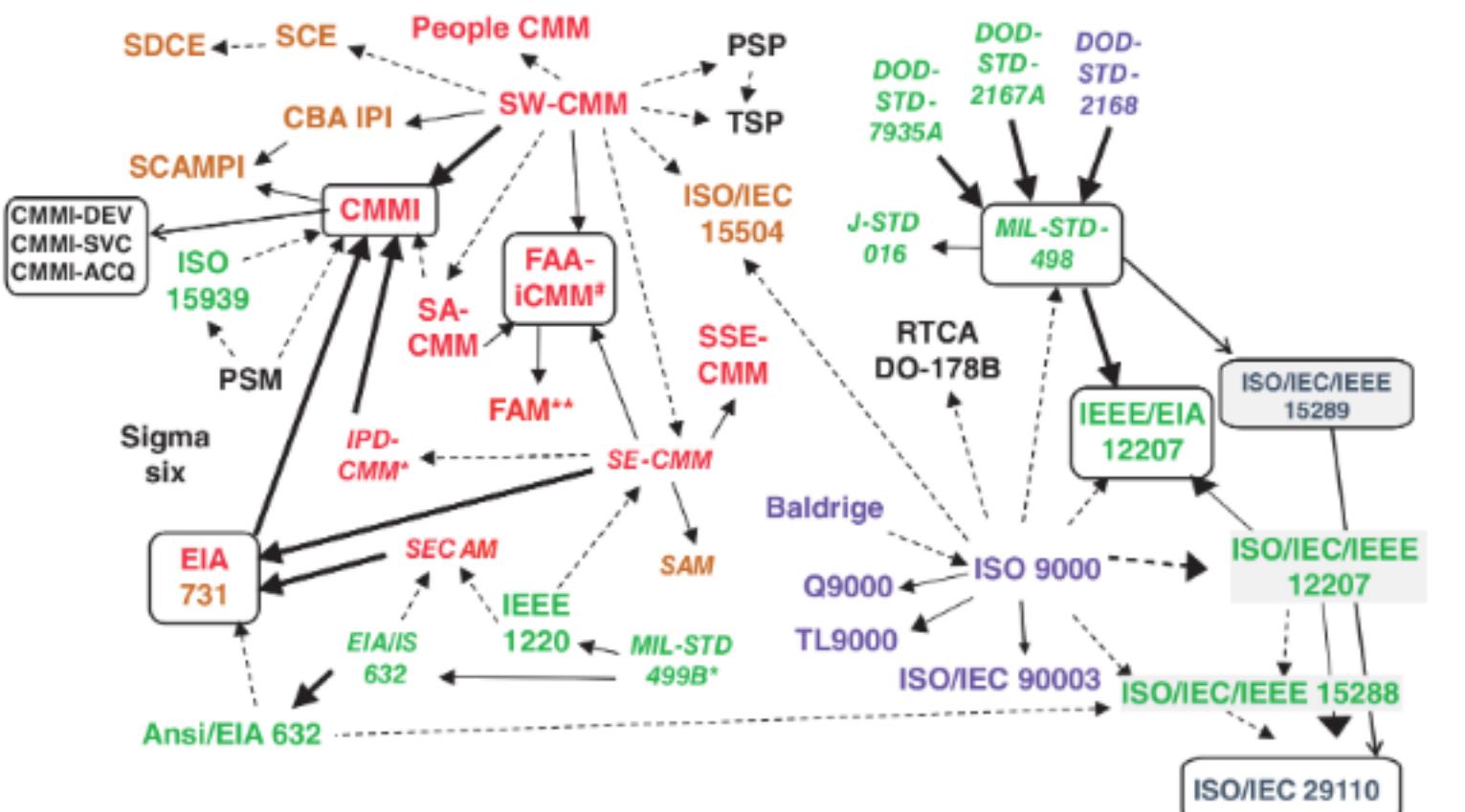
Application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.

[SOURCE: ISO/IEC/IEEE 12207]

Introducción: ¡normas! ¡normas! ¡normas!



Introducción: ¡normas! ¡normas! ¡normas!



¿Cuál es el estado actual de la aplicación de la ingeniería del software?

¿Cuál es el estado actual de la aplicación de la ingeniería del software?



La importancia de las PyMEs en la economía

Type of enterprise	Number of employees	Annual turnover (EURO)	Number of enterprises (% of overall)	Number of enterprises
Micro-enterprises	1 - 9	≤ 2 million	92.2 %	19 968 000
Small enterprises	10 - 49	≤ 10 million	6.5 %	1 358 000
Medium enterprises	50 – 249	≤ 50 million	1.1 %	228 000
SMEs, total	87 100 000		99.8 %	21 544 000*
Large enterprises	> 250	> 50 million		
Large enterprises, Total	42 900 000		0.2 %	43 000

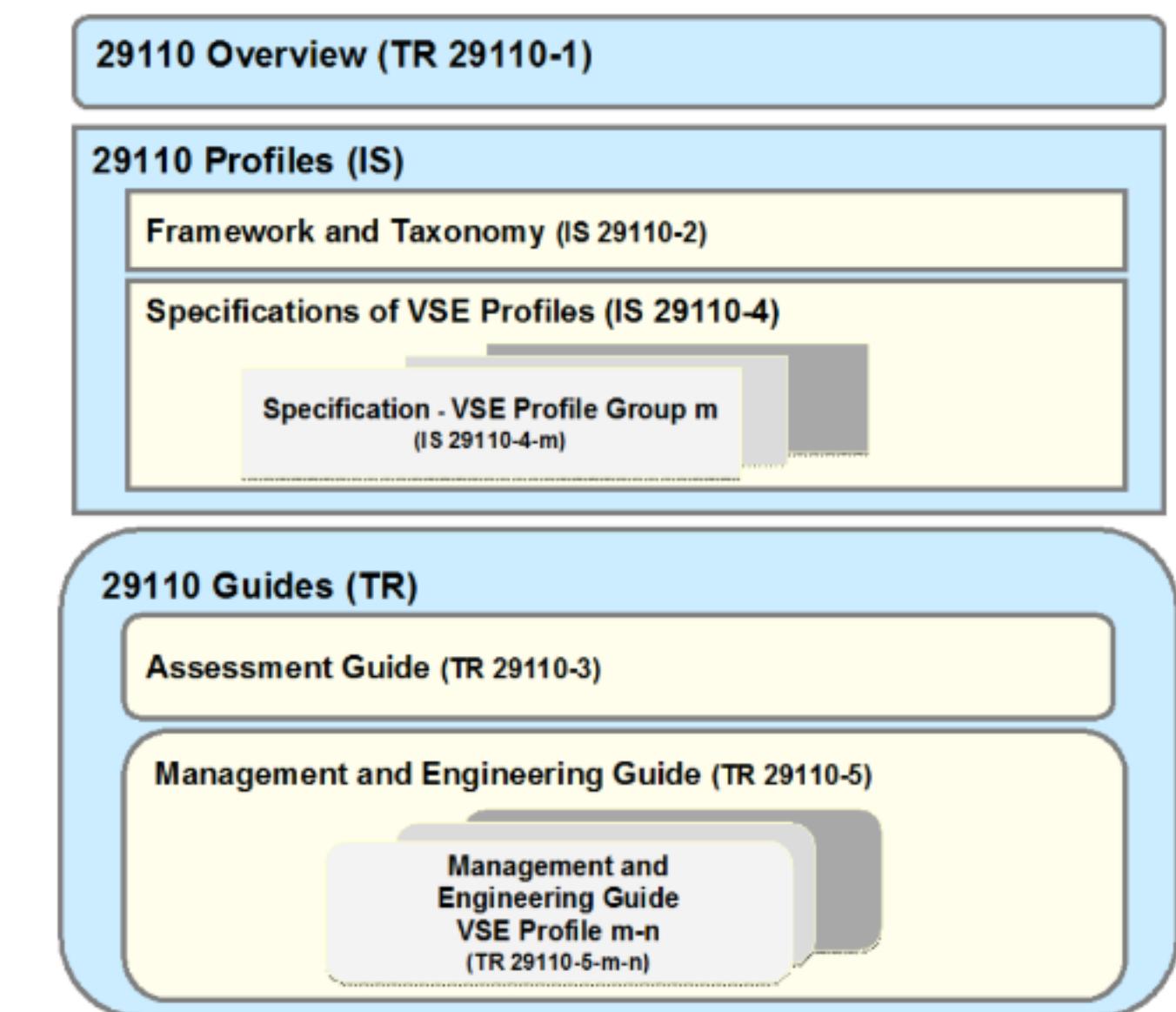
* Independent companies only, excluding legally independent companies that are part of large enterprises.

ISO/IEC 29110 como solución

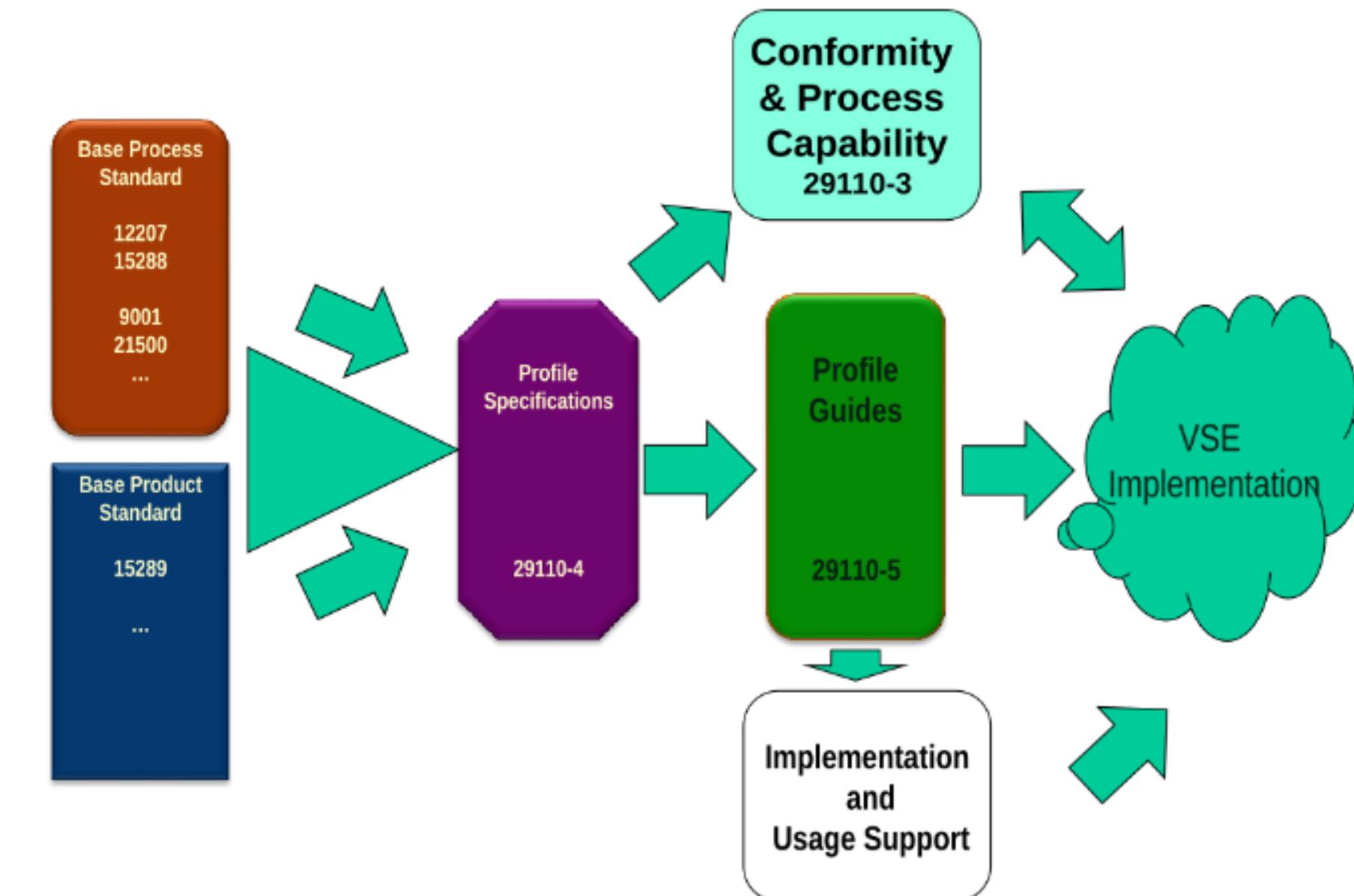
ISO/IEC 29110 is the first international software process improvement scheme **created specifically for very small entities (VSE)**. It allows small organizations to be able to gradually evolve their quality development along with their business improvement. It is affordable, small and easy to understand and implement.

ISO/IEC 29110 aims to help small organizations **improve their software and systems developments and services provision** and to certify them to show their excellency levels. It aims to define simple process models, with guides to facilitate their implementation, grouping the processes in an incremental way, increasing step by step the degree of maturity of the organizations, and always as previous steps of already existing more complex process models.

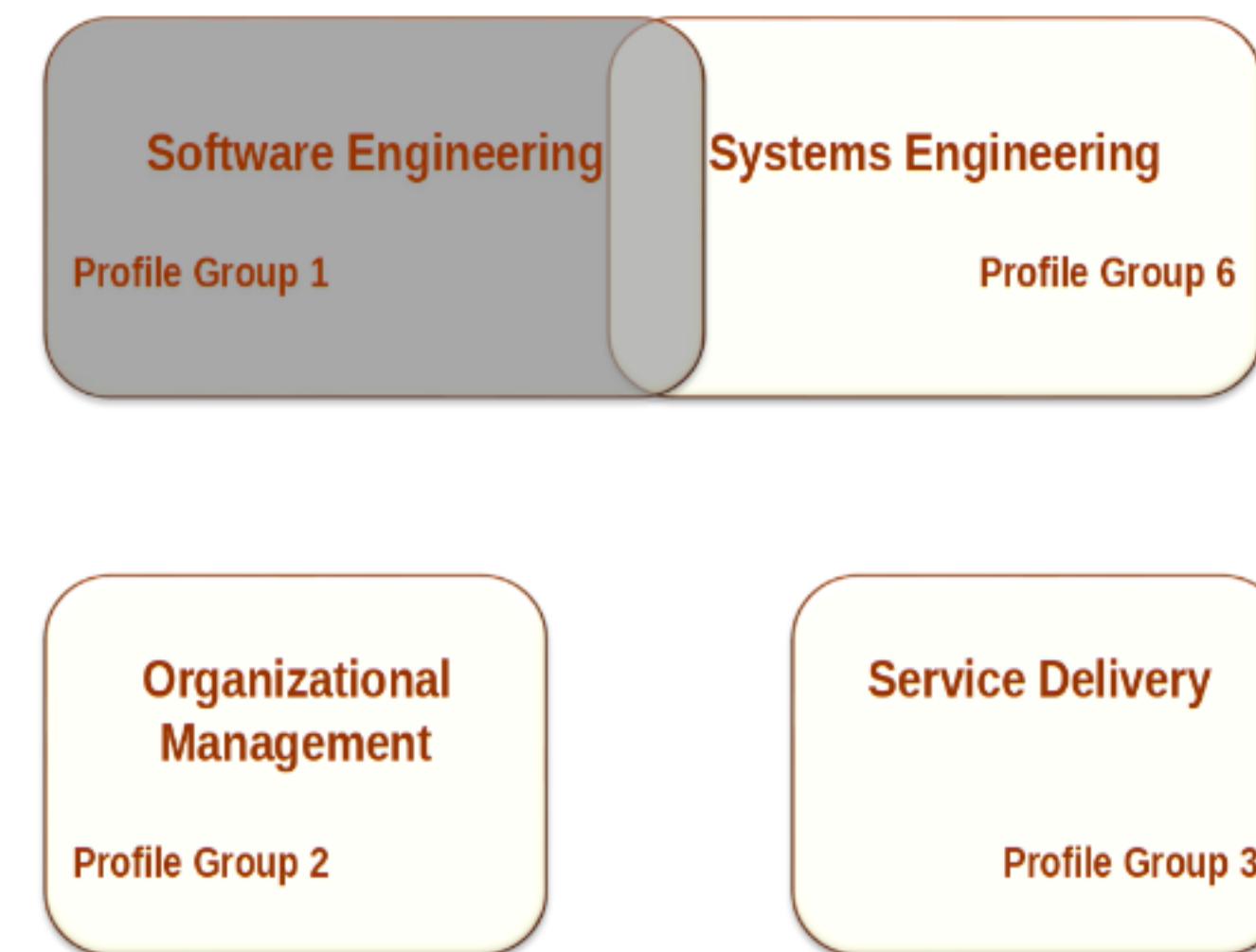
[Source: <http://www.upto25.net/en/content/why-isoiec-29110/>]



Part 1: TR 29110-1 Overview									
Part 2 Framework for profile preparation									
IS 29110-2-1 Framework and Taxonomy of standardized profile			TR 29110-2-2 Guide for Domain Profiles						
Part 3 Certification and Assessment guidance									
TR 29110-3-1 Assessment Guide	IS 29110-3-2 Conformity Audit Guide	IS 29110-3-3 Capability for Conformity assessment		TR 29110-3-4 Self Assessment					
Part 4 29110-4 Domain Profile Specifications									
IS 29110-4-1 Software Engineering	IS 29110-4-2 Organizational management	IS 29110-4-3 Service Delivery	IS 29110-4-4 Agile Software Development	IS 29110-4.5 DevOps	IS 29110-4-6 Systems Engineering				
Part 5 29110-5 Domain Profile Implementation Guidelines									
29110-5-1 Software Engineering	29110-5-2 Organizational management Implementation Guidelines	29110-5-3 Service Delivery	29110-5-4 Agile Software Development	IS NP TR 29110-5-5 DevOps	29110-5-6 Systems Engineering				
<ul style="list-style-type: none">• Entry• Basic• Intermediate• Advanced		<ul style="list-style-type: none">• Gobernance• Supporting Processes• Continual Improvement		<ul style="list-style-type: none">• Entry• Basic• Intermediate• Advanced					
Part 6: 29110-6 Management and engineering guides not tied to a specific profile									
Planned [SOURCE: ISO/IEC 29110-1]									

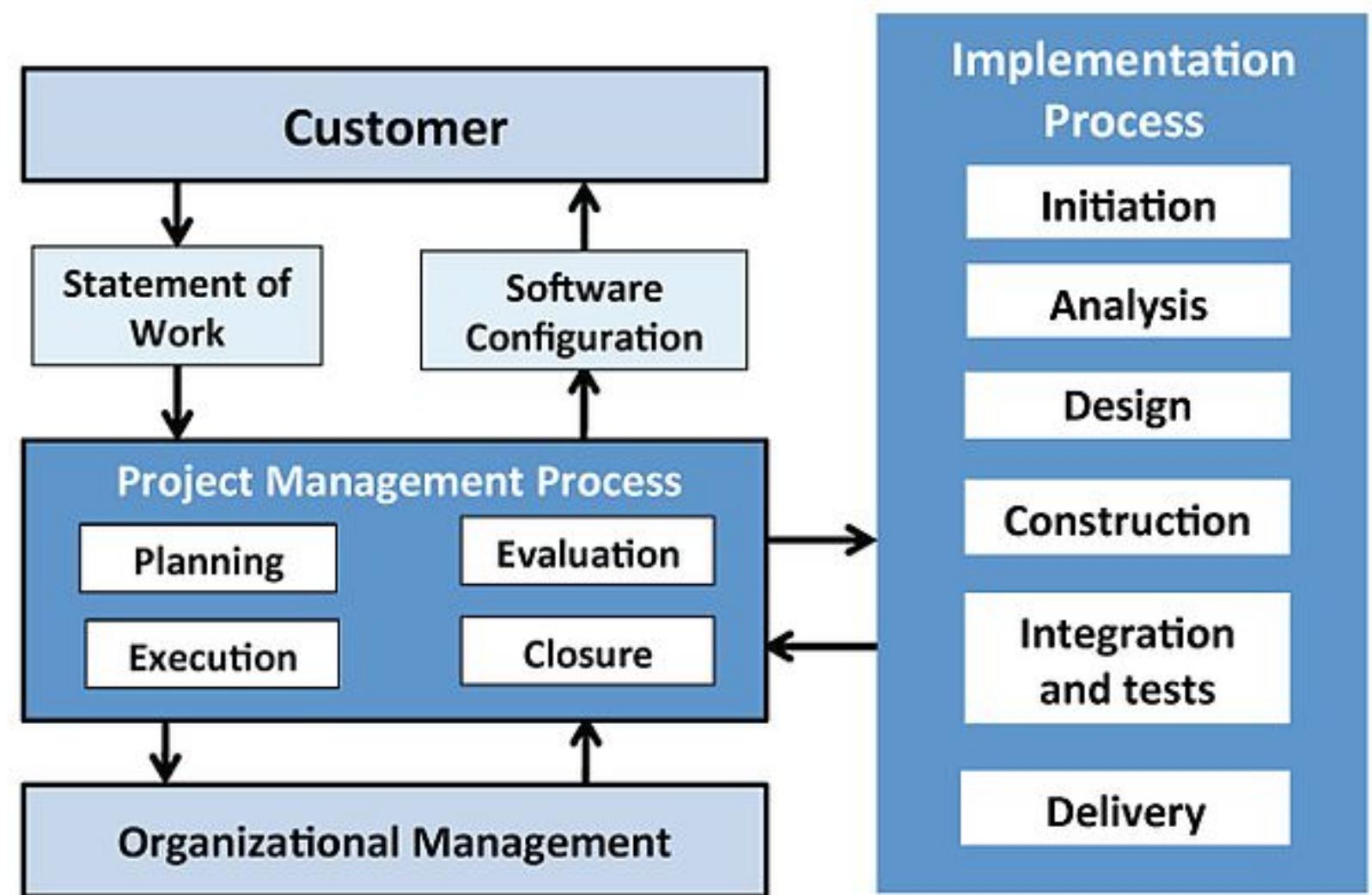


[Fuente: SD-63 WG24 Business Plan 2018-20]



[Fuente: SD-63 WG24 Business Plan 2018-20]

Software engineering — Lifecycle profiles for Very Small Entities (VSEs) — Part 5-1-2: Management and engineering guide: Generic profile group: Basic profile



[Fuente: https://en.wikipedia.org/wiki/ISO_29110]

ISO/IEC 29110-5-1: comparación de complejidad

Process Name	Number of Tasks			
	Entry	Basic	Intermediate	Advanced
Project Management	18	26	33	40
Implementation	22	41	50	51
Business Management			24	32
Acquisition Management			8 *	9 *
Transition and Disposal Management				14 *
Total	40	67	107 (+ 8 conditional)	123 (+ 23 conditional)

* Conditional process (e.g. for a VSE that acquire product externally)

	Number of Work Products and Roles			
	Entry	Basic	Intermediate	Advanced
Number of Work Products	14	22	39 (+ 3 conditional) *	42 (+ 7 conditional) *
Number of Roles	3	7	8 (+ 1 conditional) *	8 (+ 1 conditional) *

A few work products from the Basic profile have been modified
 * Conditional process (e.g. for a VSE that acquire product externally)

Es importante considerar que el estándar ISO/IEC 29110 es el más adecuado para que una pequeña organización desarrolladora de software pueda optar en primera instancia a un enfoque orientado a procesos con el fin de poder encaminarse hacia una evolución organizacional que le permita en el futuro incrementar la capacidad de los procesos buscando alinearse con estándares más robustos, como lo son ISO/IEC 33000 y CMMI.

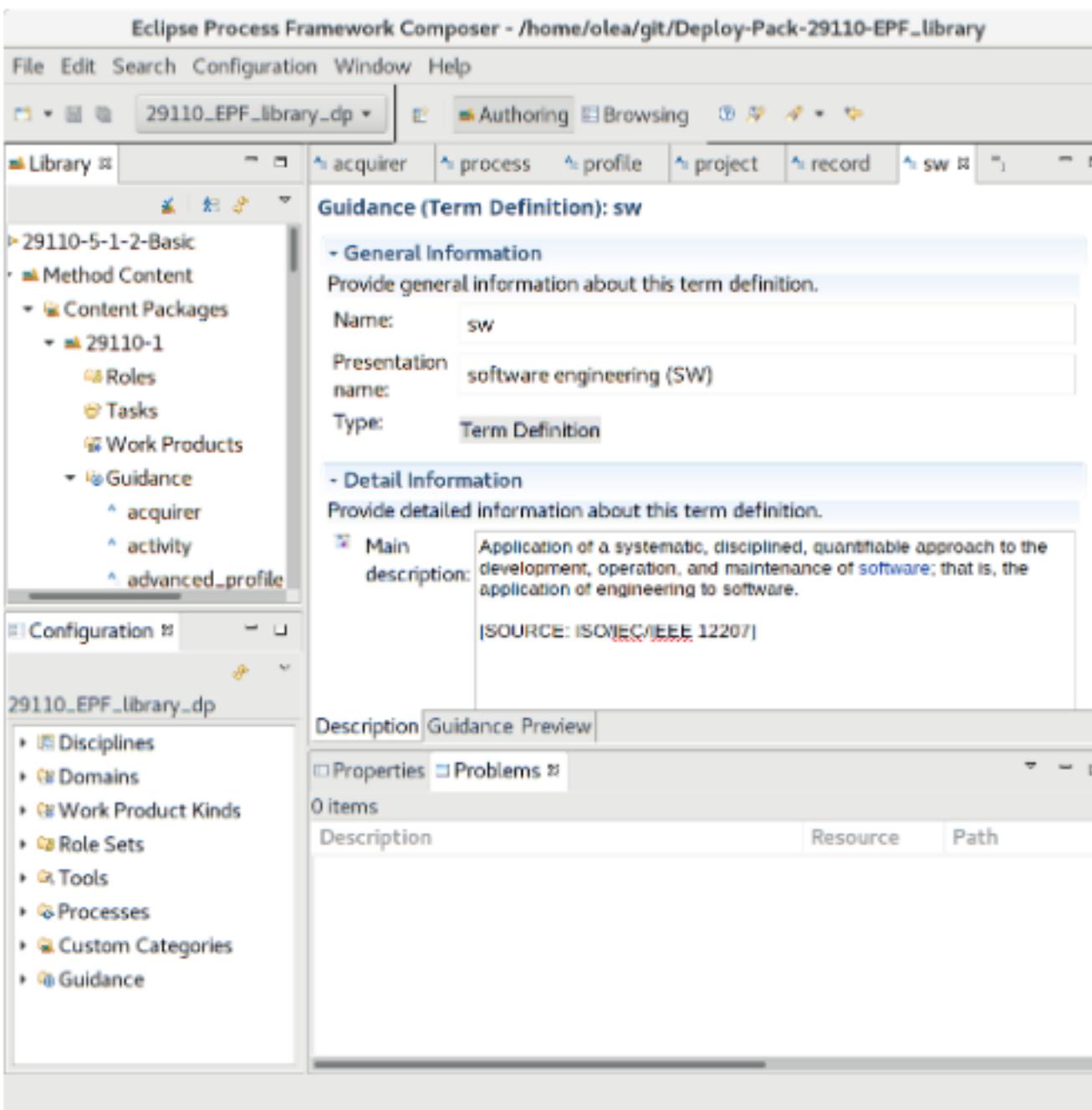
Fuente: Pino Correa y otros, 2018]



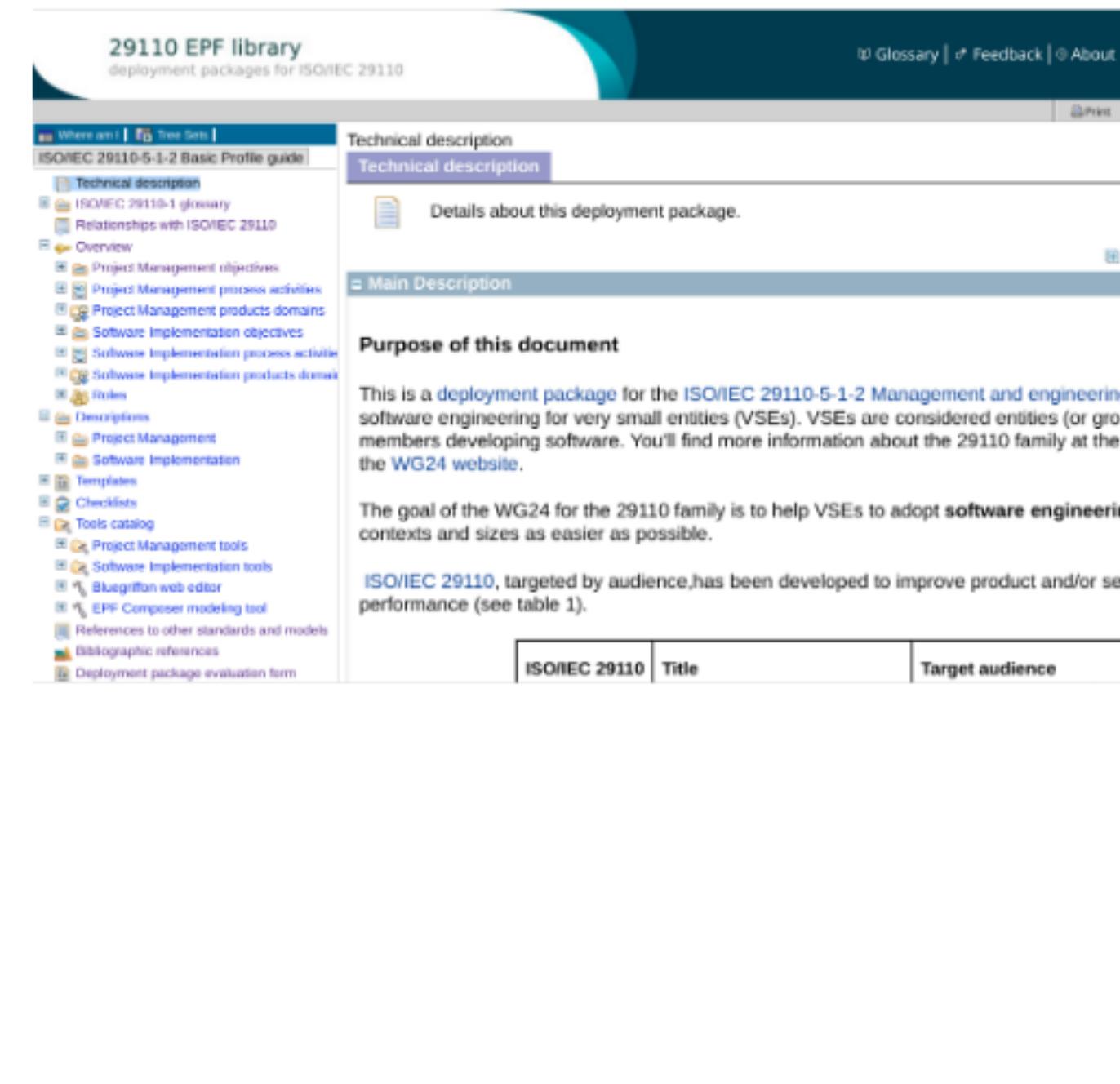
Una biblioteca con las prácticas de ingeniería de software y sistemas de la familia de documentos ISO/IEC 29110

- VSEs are considered entities (or group or teams) with less than 25 members developing software.
- la biblioteca publicada en dos maneras
 - plugin EPF, para desarrollo o personalización
 - bibliotecas web (documentas)

29110_EPF_library



The screenshot shows the Eclipse Process Framework Composer interface. The title bar reads "Eclipse Process Framework Composer - /home/olea/git/Deploy-Pack-29110-EPF_library". The main window displays the "Guidance (Term Definition): sw" page. The left sidebar shows a tree structure under "29110-5-1-2-Basic" with nodes like "Method Content", "Content Packages", "29110-1", and "Guidance". The right panel has two tabs: "General Information" and "Detail Information". Under "General Information", the name is set to "sw", presentation is "software engineering (SW)", and type is "Term Definition". Under "Detail Information", the main description is defined as: "Application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software." A note indicates the source is ISO/IEC/IEEE 12207. Below this, there are tabs for "Description" and "Guidance Preview", and a "Properties" tab showing "0 items".



The screenshot shows the "29110 EPF library" deployment package page. The top navigation includes "Glossary", "Feedback", and "About". The left sidebar lists "ISO/IEC 29110-5-1-2 Basic Profile guide", "Technical description", "Overview", "Descriptions", "Templates", and "Deployment package evaluation form". The main content area has tabs for "Technical description" (selected) and "Main Description". The "Main Description" tab contains the purpose of the document, stating it is a deployment package for ISO/IEC 29110-5-1-2 Management and engineering software engineering for very small entities (VSEs). It mentions the goal of the WG24 is to help VSEs adopt software engineering contexts and sizes as easier as possible. It also notes ISO/IEC 29110 is targeted by audience.

The screenshot shows the 'Terms and definitions' page of the 29110 EPF library. The top navigation bar includes links for 'Glossary', 'Feedback', and 'About'. The main content area displays a list of terms related to the implementation of the 29110 EPF library, such as 'Eclipse Process Framework (EPF)', 'EPF configuration', 'EPF content package', 'EPF library', 'EPF method plug-in', 'ISO/IEC 29110', 'opensource', 'process tailoring', and 'Risk'. On the left, a sidebar lists various sections including 'Where am I', '29110 EPF library', 'ISO/IEC 29110-5-1-2 Basic Profile', '29110-5-4 Agile', '29110-5-1-2 Basic Design', 'Library description', 'Relationships', 'Main Description', and 'Key Considerations'.

Nombre	Tamaño	Tipo	Modificado
29110-5-1-2-Basic	10 elementos	Carpeta	21 dic 2018
29110-5-1-2-Basic-Design	3 elementos	Carpeta	21 dic 2018
29110-5-4-Agile	1 elemento	Carpeta	14 dic 2018
29110_EPF_library_dp	5 elementos	Carpeta	21 dic 2018
configurations	4 elementos	Carpeta	21 dic 2018
library.xmi	2,4 kB	Texto	7 dic 2018
LICENSE.md	1,1 kB	Texto	15 nov 2018
logs	1 elemento	Carpeta	10ene
README.md	1,9 kB	Texto	15 nov 2018
TODO.md	320 bytes	Texto	18 dic 2018

Visión

Partiendo de las siguientes observaciones:

- la importancia general en la economía de las PyME (añadir cifras)
- la dificultad de atender las necesidades TIC de la economía mundial a corto y medio plazo
- la terrible situación práctica de la calidad del desarrollo del software por falta de herramientas y métodos rigurosos

se pretende promover la excelencia en la calidad de la producción de software y sistemas a través de prácticas y artefactos adaptados a la realidad de organizaciones muy pequeñas, adoptando la familia de documentos ISO/IEC 29110. Y para reducir las barreras a la adopción procurar herramientas software y licencias opensource y el desarrollo de comunidades abiertas.

Misión

Modelar las normas ISO/IEC 29110 en una biblioteca publicada con licencia MIT apta para ser adoptadas y ajustadas en organizaciones muy pequeñas, menos de 25 miembros. Completando la biblioteca, publicar con licencias abiertas colecciones de recursos relacionados —herramientas, plantillas, listas de comprobación, etc— y promover comunidades abiertas de adopción y desarrollo.

Cómo

- Modelando en SPEM (Software Process Engineering Metamodel) los «technical reports» de 29110 en forma de «plugin» EPF (Eclipse Process Framework) usando la herramienta EPF Composer.
- completando la biblioteca con recursos para el desarrollo
- comunidad abierta

Cuándo

- origen en México: MoProSoft
- comité ISO WG24
- tercero, fechas de la primeras ediciones y algo de las actuales
- 2018-2019, a través de un TFG

Dónde

- ISO/IEC WG24: <https://profs.etsmtl.ca/claporte/English/VSE/>
- http://olea.org/tmp/Deploy-Pack-29110-EPF_library/
- <http://olea.org/tmp/Deploy-Pack-29110-5-1-2-Basic/>
- <https://github.com/olea/Deploy-Pack-29110-5-1-2-Basic-library>
- <http://olea.org/tag/29110/>
- Editor principal: EPF Composer <https://www.eclipse.org/epf/>

Quiénes

- a partir de material original de Roger Champagne
- en desarrollo activo por Ismael Olea en un TFG

Relativo a mi TFG:

- <http://olea.org/tag/29110/>
- presentación de mi TFG a principios de septiembre de 2019
- publicación en un repositorio público

Relativo al proyecto, en un mundo ideal, una comunidad de:

- <https://library.29110>, bibliotecas publicadas como web estáticas
- <https://devel.29110>, una comunidad de desarrollo de artefactos digitales
- <https://talk.29110>, foro abierto de consultas
- <https://feedback.29110>, herramienta de propuesta de mejoras
- <https://policies.29110>, definición de procesos y procedimientos de gobernanza de la comunidad.

Starting in 2018:

- IS 29110-4-4 Agile Software Development - Profile specifications – Generic profile.
- TR 29110-5-4 Agile Software Development Guidelines
- IS 29110-4-5 DevOps - Profile specifications – Generic profile.
- TR 29110-5-5 DevOps Guidelines
- IS 29110-1 ed3 Overview
- 29110-4-6 - Syst. Eng Profiles Specs (NWIP, CD)

(fuente SD-63 WG24 Business Plan 2018-20)



Participe con sus comentarios y sugerencias:

<http://olea.org/diario/> o @olea

Transparencias disponibles en:

http://olea.org/conferencias/doc-conf-20190621-Congreso_esLibre