



Universidad Nacional
Autónoma de México



Facultad
de
Ciencias

Estimates validation for government software projects through Software Accountability Office Office[®]

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CHAIRMAN

COSMIC Practices Committee

Mexican Software Metrics Asociation (AMMS)

Founder





01

Software Accountability Office (SAO)

Concept

02

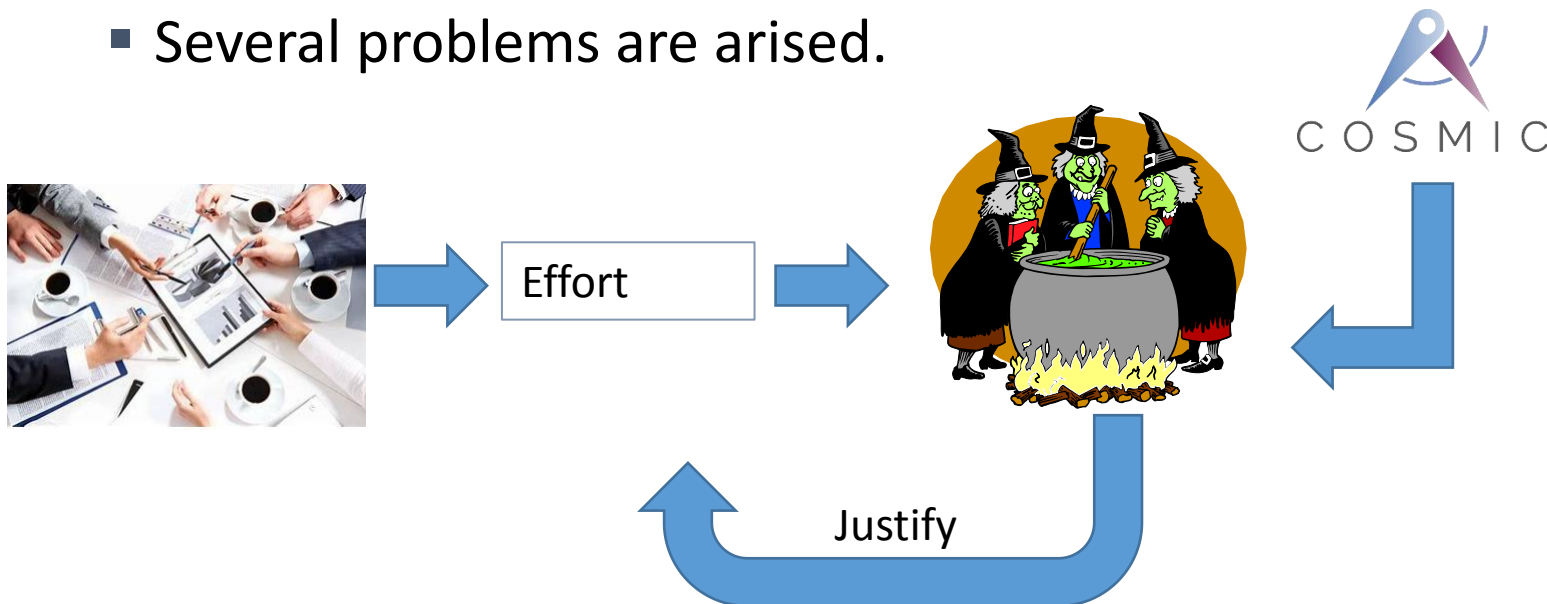
SAO Application

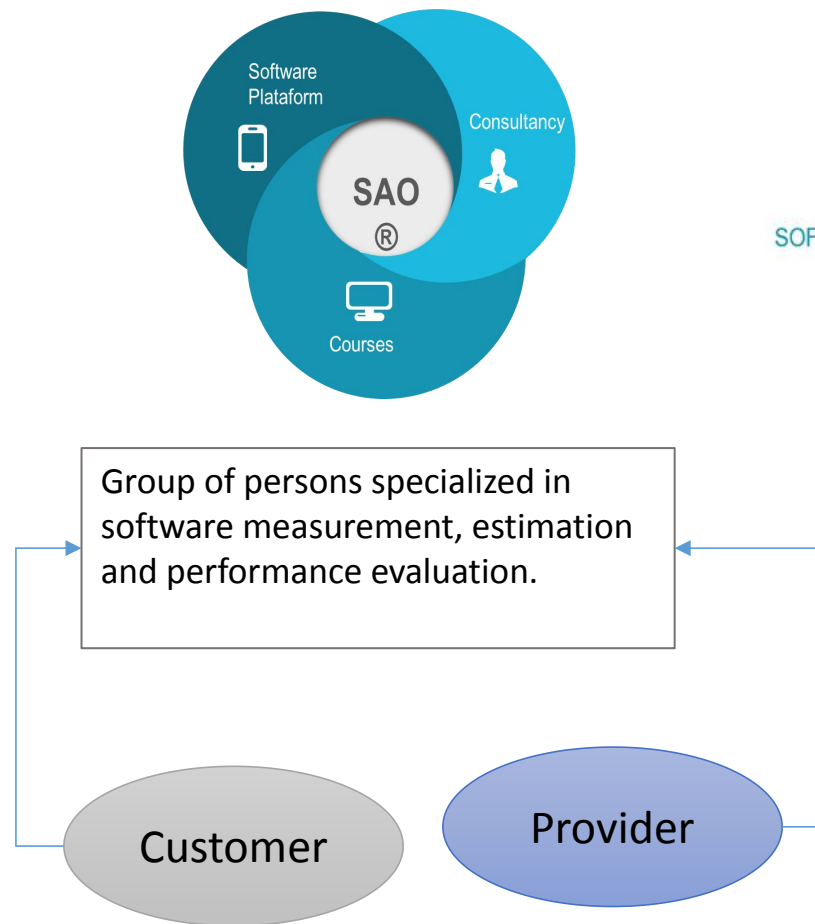
03

Results



- COSMIC (ISO/IEC 19761) is a National Norm in Mexico since 2006.
- The use of COSMIC begins in 2016
- There are people that study COSMIC but they do not know how to estimate with COSMIC.
- Several problems are arised.





SOFTWARE MEASUREMENT
Based on COSMIC
Historic database

01

02

SOFTWARE ESTIMATION

Estimation models development
Estimations
Estimates validation
Estimations based in EPCU Model.

03

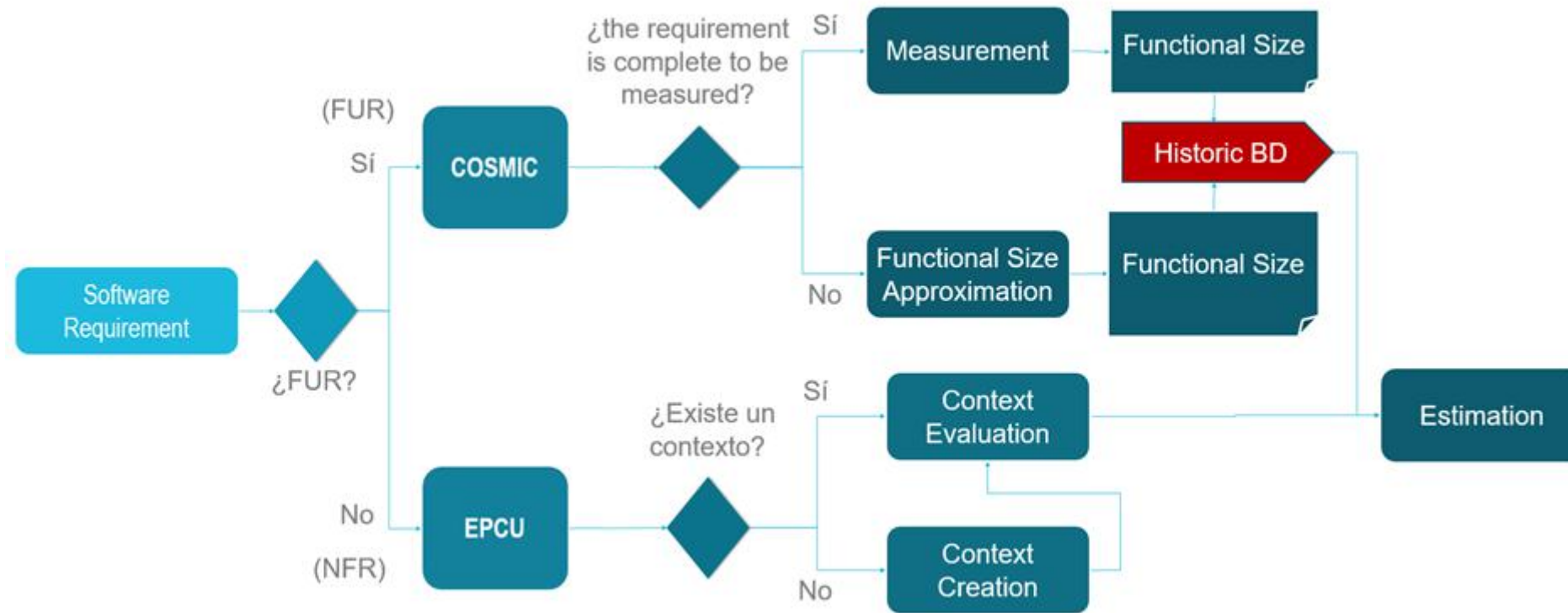
**SOFTWARE PROJECTS PERFORMANCE
EVALUATION**

Performance evaluation Time(ES), Cost (EV), Scope (ESM)

04

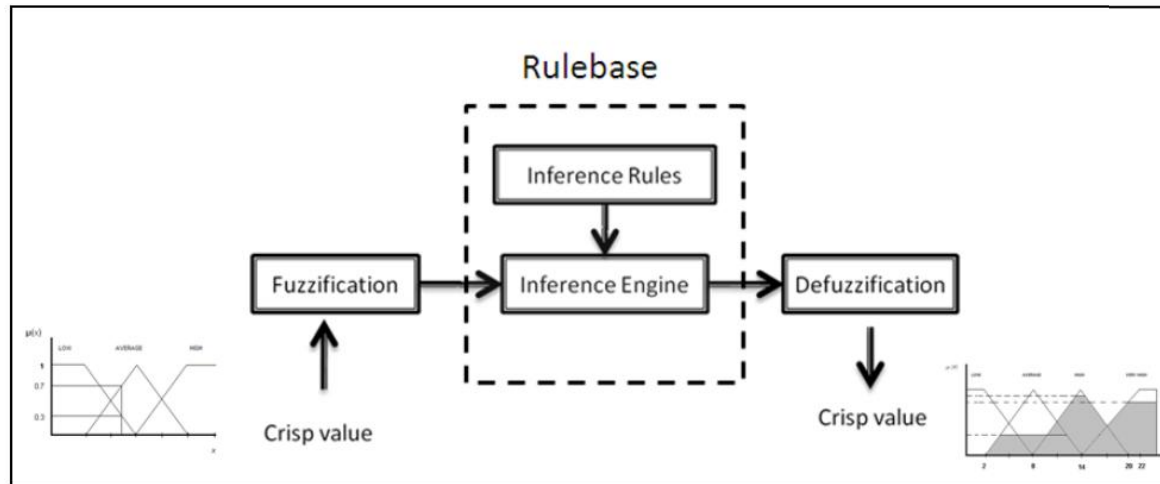
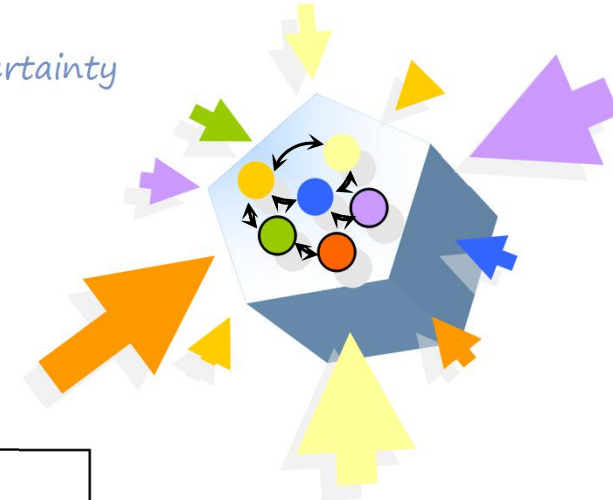
**SOFTWARE PRODUCT
QUALITY EVALUATION**

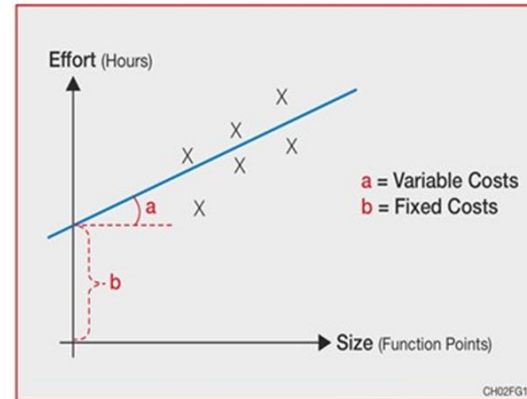
Quality Evaluation through ISO 25000



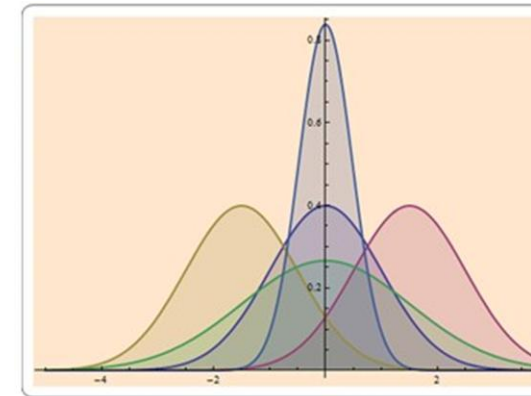
EPCU is the acronym for Estimation of Projects in a Context of Uncertainty

“The Uncertainty: it is not possible to measure it, however it is possible to contextualize it”

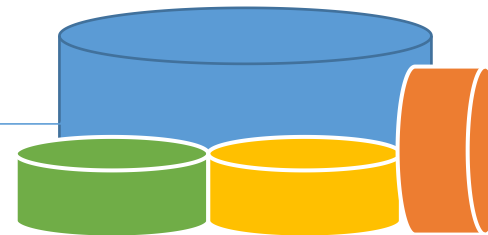




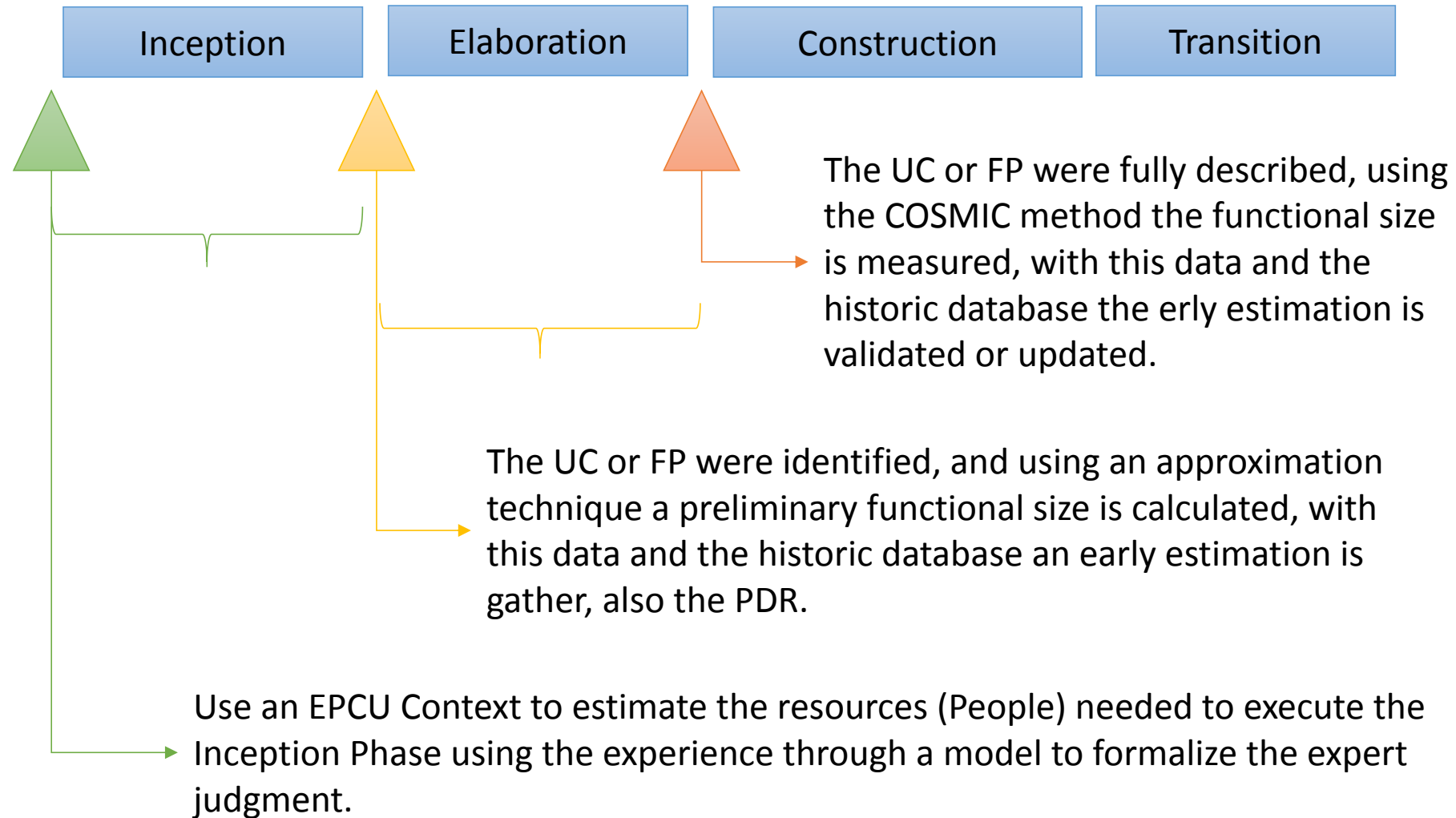
Estimation Purpose



Estimation
Validates
Purpose



Historic Database

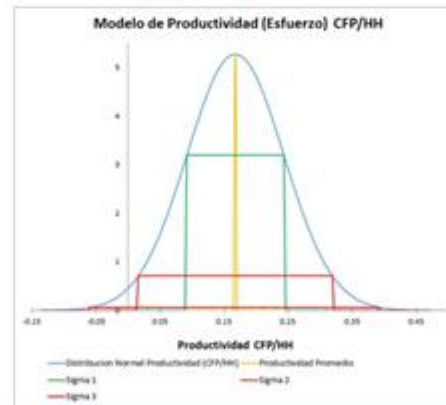




01 TAMAÑO [CFP]



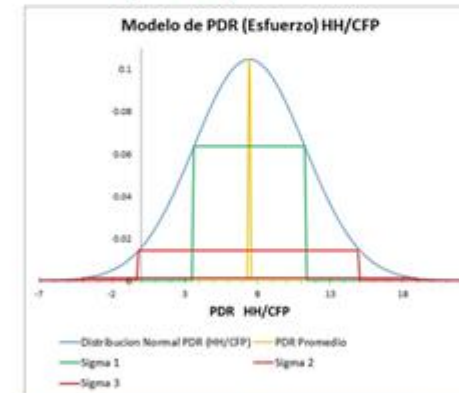
02 PRODUCTIVIDAD [CFP/HH]



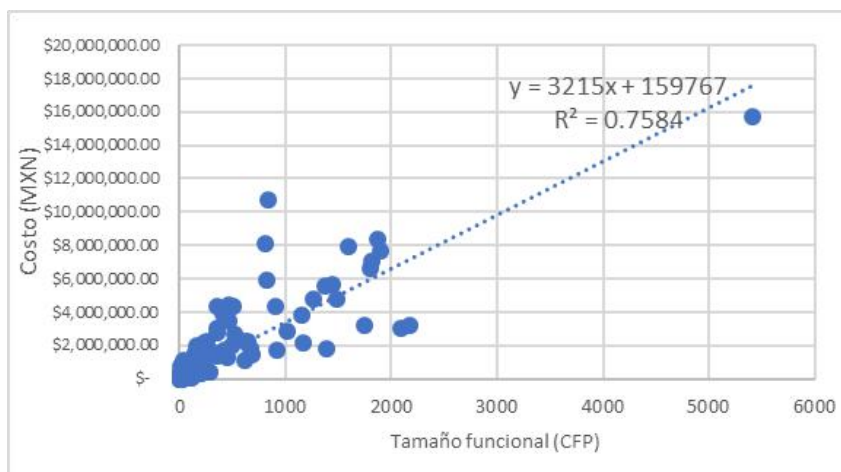
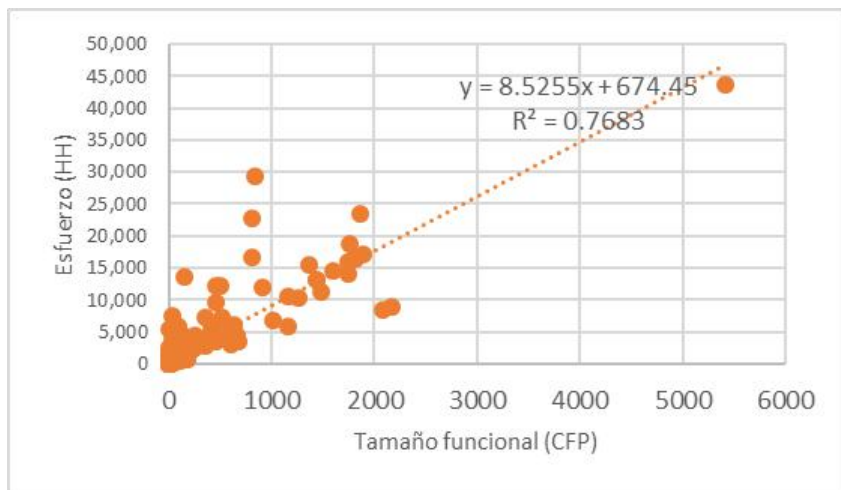
| PARAMETRO | VALOR |
|-----------------|-----------------|
| MEDIA | 0.167 |
| DESVIACIÓN EST. | 0.076 |
| SIGMA 1 | (0.092 a 0.243) |
| SIGMA 2 | (0.016 a 0.319) |
| SIGMA 3 | (-0.06 a 0.391) |



03 FACTOR DE PRODUCTIVIDAD (PDR) [HH/CFP]



| PARAMETRO | VALOR |
|-----------------|------------------|
| MEDIA | 7.43 |
| DESVIACIÓN EST. | 3.81 |
| SIGMA 1 | (3.62 a 11.24) |
| SIGMA 2 | (-0.185 a 14.89) |
| SIGMA 3 | (-4.0 a 18.85) |

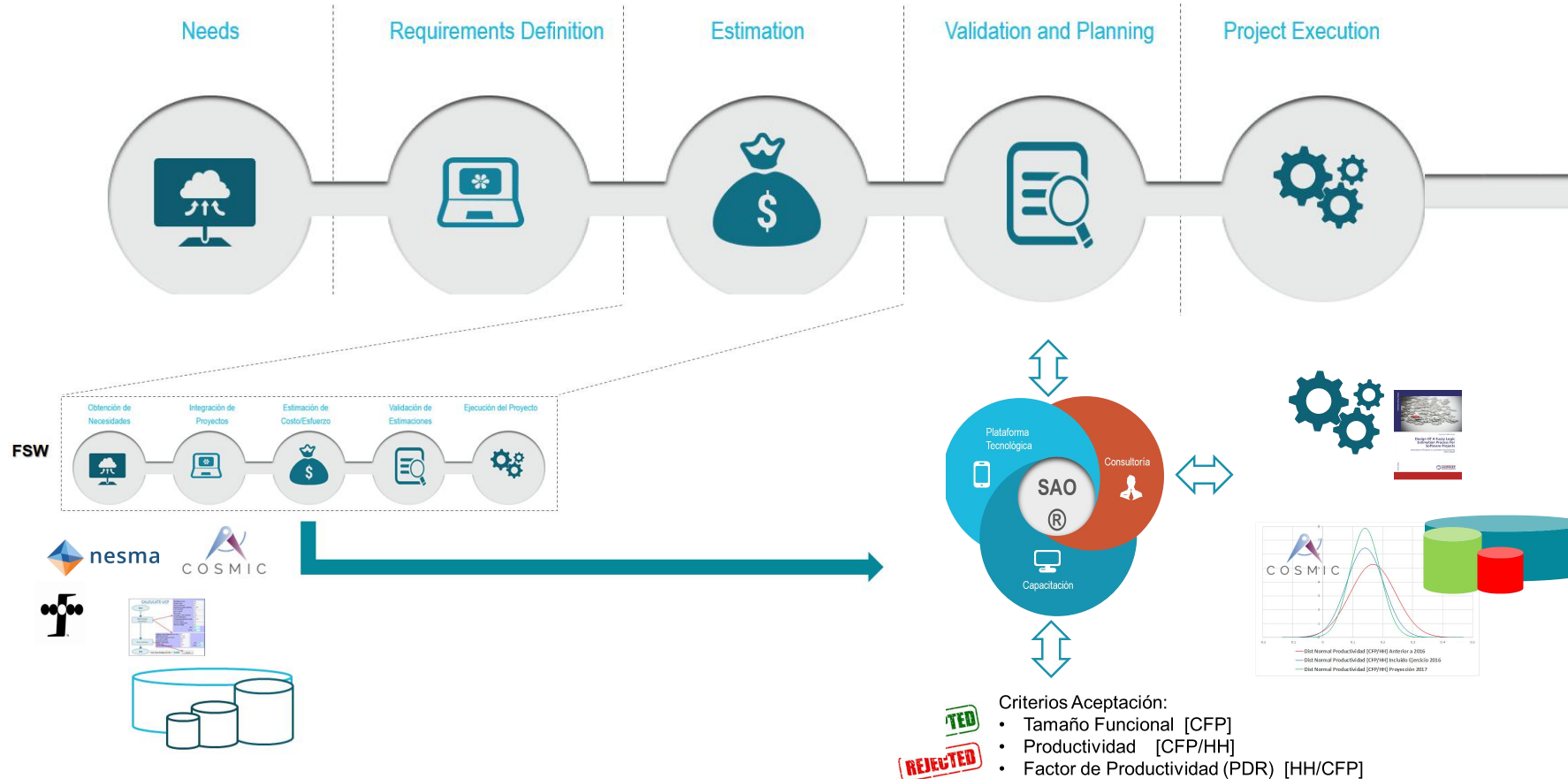


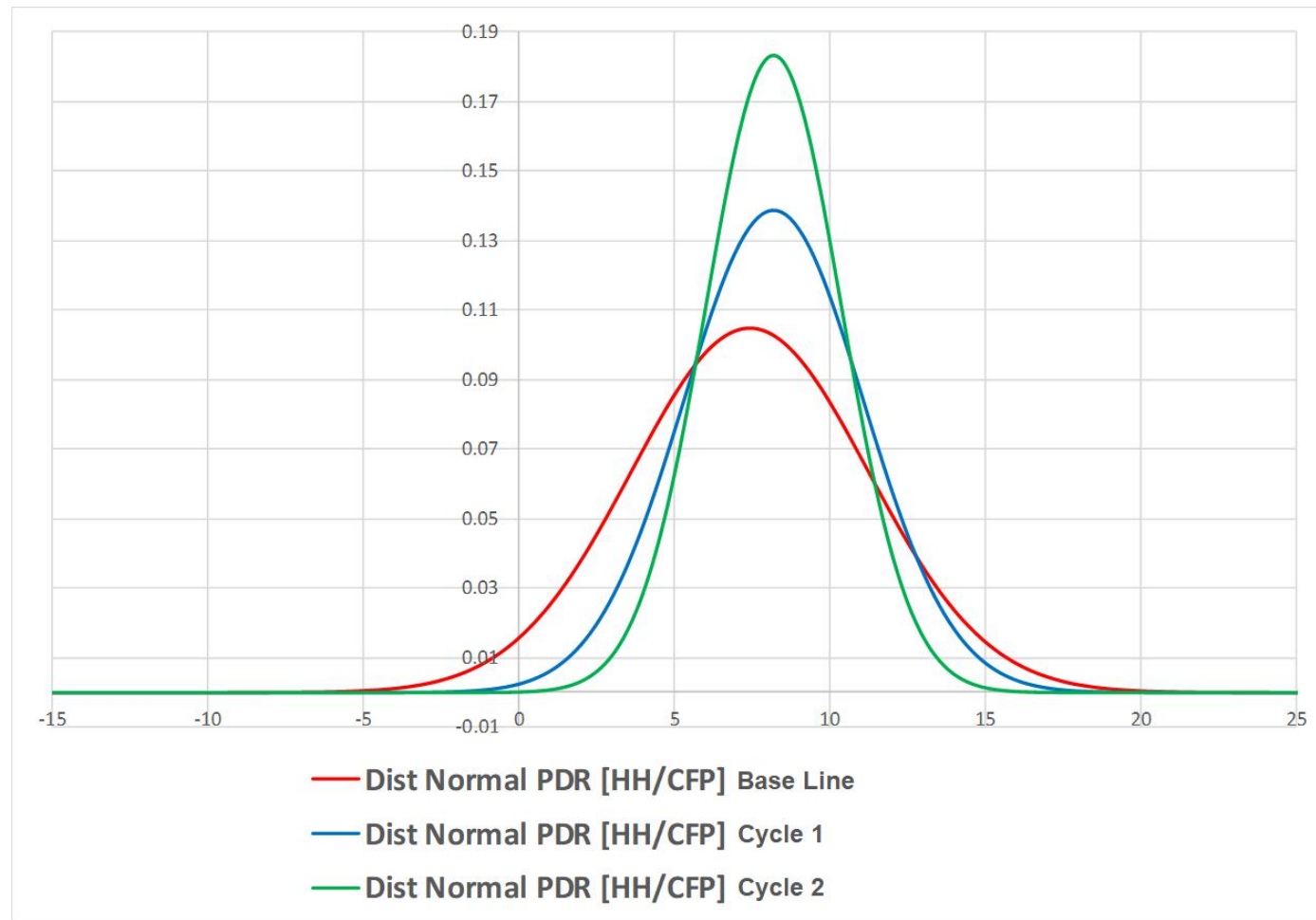
Coefficiente de determinación individual: esfuerzo total

| Variable | Coefficiente |
|---|--------------|
| Tamaño funcional: COSMIC | 0.75 |
| Certificación en modelo de calidad | 0.38 |
| Lenguaje principal de programación | 0.30 |
| Sector de la organización usuaria del software final | 0.23 |
| Base de datos | 0.23 |
| Tipo de desarrollo | 0.20 |
| Sistema Operativo | 0.15 |
| Tamaño de la organización desarrolladora del software | 0.11 |
| Arquitectura | 0.09 |

Coefficiente de determinación individual: costo total

| Variable | R^2 |
|---|-------|
| Tamaño funcional: COSMIC | 0.75 |
| Certificación en modelo de calidad | 0.48 |
| Lenguaje principal de programación | 0.34 |
| Sector de la organización usuaria del software final | 0.31 |
| Base de datos | 0.28 |
| Tamaño de la organización desarrolladora del software | 0.20 |
| Tipo de desarrollo | 0.20 |
| Sistema Operativo | 0.19 |
| Arquitectura | 0.09 |



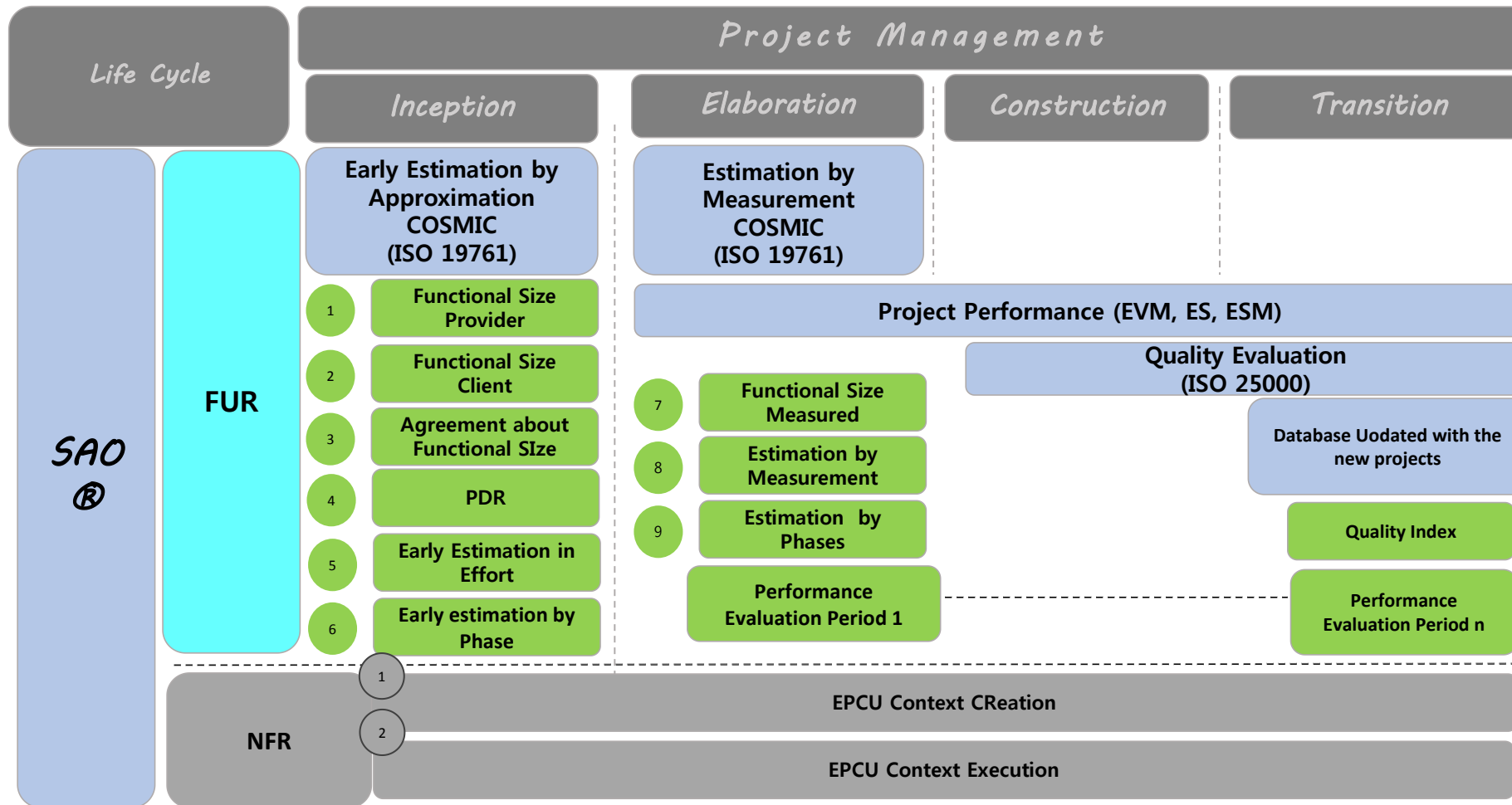




| Projects | Estimated Effort | Approved Effort | Difference |
|---------------|------------------|--------------------|-------------------|
| +Proyecto 1 | +11,745 | +10,213.84 | +1,531.16 |
| +Proyecto 2 | +35,808 | +23,515.57 | +12,292.43 |
| +Proyecto 3 | +36,500 | +22,802.98 | +13,697.02 |
| +Proyecto 4 | +16,523 | +13,064.21 | +3,458.79 |
| +Proyecto 5 | +22,660 | +20,902.73 | +1,757.27 |
| +Proyecto 6 | +59,379 | +52,969.42 | +6,409.58 |
| +Proyecto 7 | +95,240 | +70,071.66 | +25,168.34 |
| +Proyecto 8 | +36,210 | +35,629.66 | +580.34 |
| +TOTAL | +314,065 | +249,170.07 | +64,894.93 |

Savings

>20%





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QUESTIONS?

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