



Title: Agile & FSM METHODS Go Well Together!

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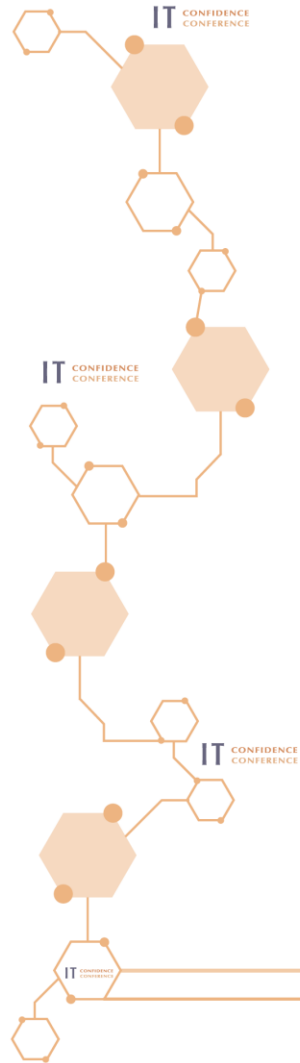
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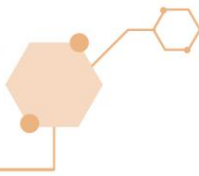
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Agenda

- The dilemma: Agile Development or Function Points?
- TI Métricas' Experience in 2017:
 - How has this been adopted in the Brazilian market?
 - What benefits were obtained from measurement?
 - Did the metrics analyst job change?
 - Are Story Points incompatible with Function Points?
- What about 2018 year?

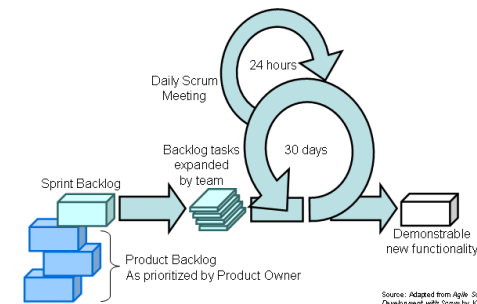
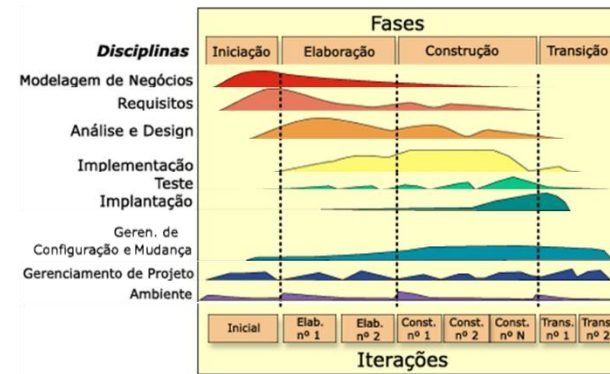
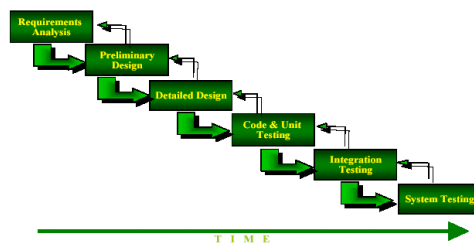




The Dilemma: Agile Development or Function Points?

“My Project is agile – can’t it be measured in Function Points?”

Figure 2: Waterfall Model of System Development



Source: Adapted from Agile Software Development with Scrum by Ken Schwaber and Mike Beedle.

All FSM Methods represent AGNOSTIC techniques in relation to technology and development methods.

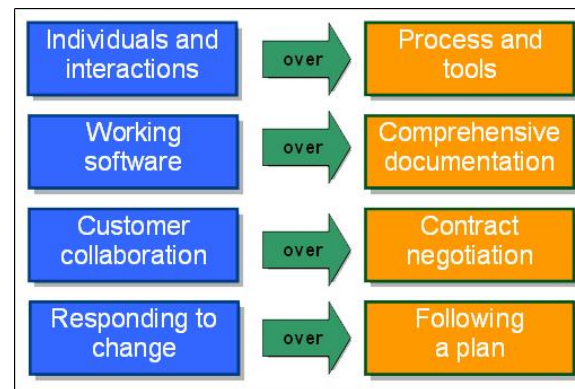
Then what’s the reason for the dilemma?



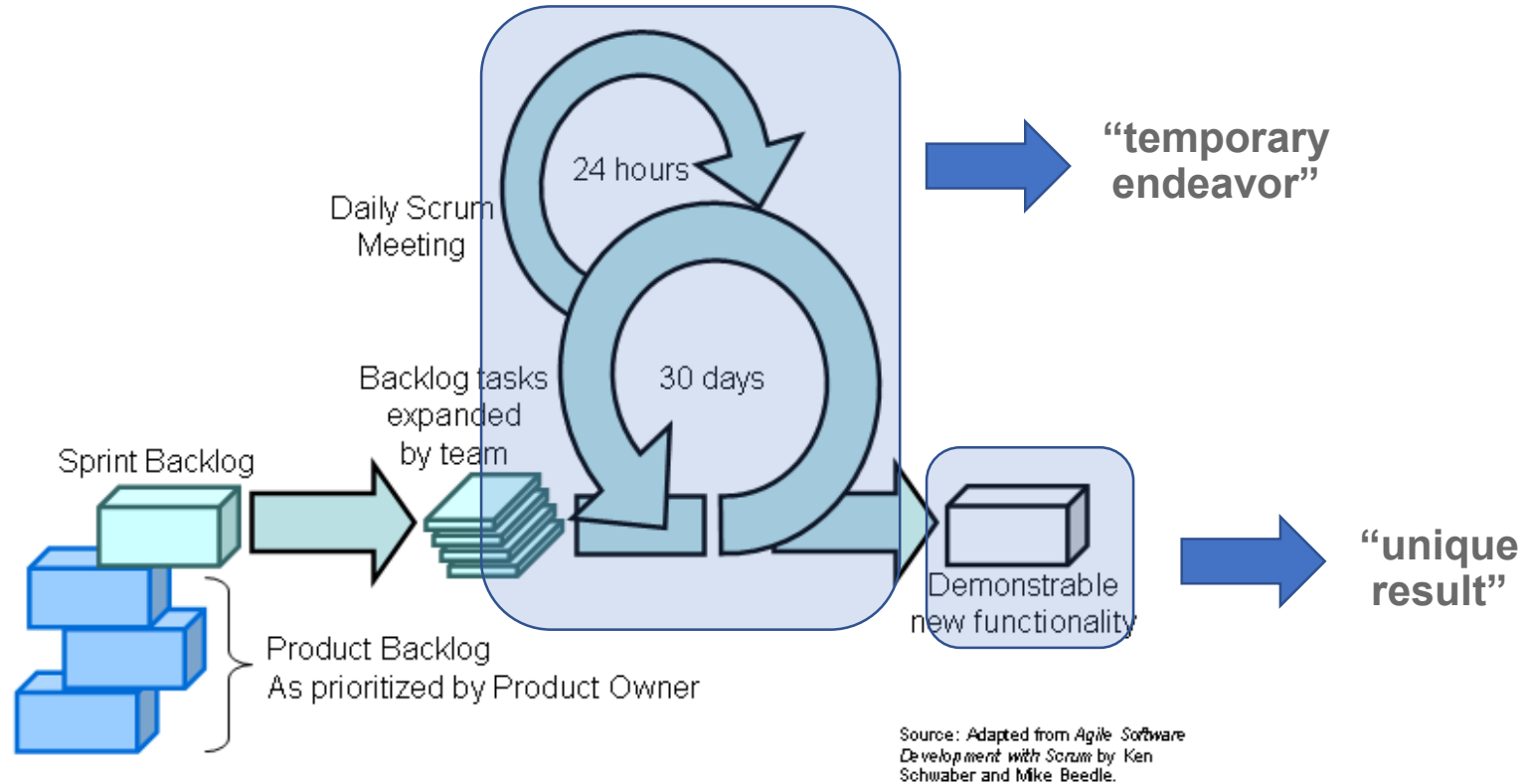
The Dilemma: Agile Development or Function Points?

- In the 2000s, the majority of projects either did not deliver as promised, or delivered after cost and/or schedule overruns
- Companies have increasingly looked for ways of delivering high-value products with higher quality, and faster.

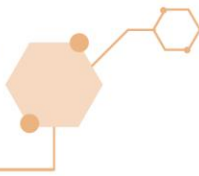
The agile mindset is necessary and a matter of market survival!



The Dilemma: Agile Development or Function Points?



Function Points are applicable to Agile development!



TI Métricas' Experience

Clients have been adopting a **HYBRID** Agile approach:

- **Agile development is still strongly influenced by governance protocols created for projects using a traditional approach in the same environment.**



TI Métricas' Experience

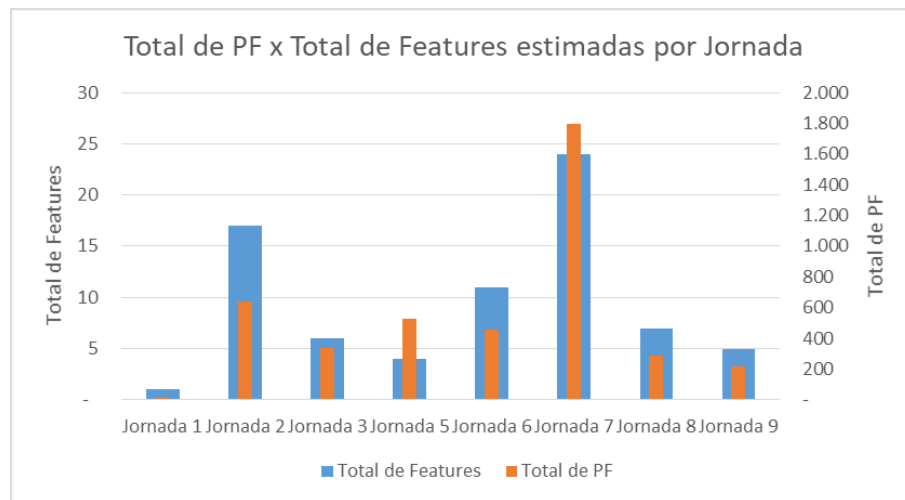
- **Client from the Finance industry**
- Deployment of a new, innovative and disruptive product.
- Adoption of agile methods, hybrid approach:
 - Each product module is still understood as an individual project,
 - Uses Scrum practices and management tools such as JIRA and Confluence.
- FP measurement of each project during the planning phase to check the software factory's proposal (from Jun/17 to Aug/17)

Savings of ~10% were obtained in relation to the initial proposals.

Case #2

TI Métricas' Experience

- **Client from the Finance industry**
- A need to estimate the 2018 budget (“Journeys”)
- FP measurement based on the features of each Journey:
 - Simplification: defining “Topics” as data functions and “Subprocesses” as transactional functions.



A budget of approximately 380.0000 work hours was estimated considered all planned Journeys.

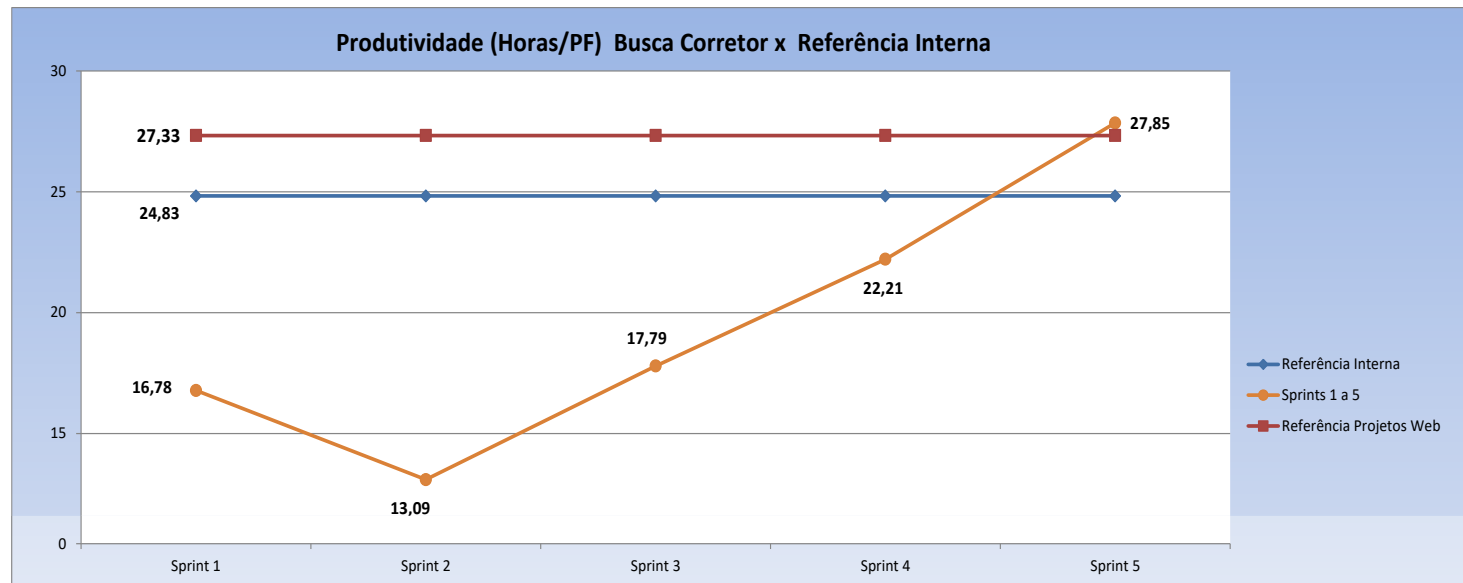
TI Métricas' Experience

- **Has the metrics analyst job changed?**
- Look for inputs, rather than documentation:
 - Better balance between documentation analysis and meetings with Business Analysts
 - Immersion in analysis meetings and Product Backlog prioritization
 - Direct access to User Stories in agile management tools.

TI Métricas' Experience

- **Client from the Insurance industry**
- Four digital transformation projects were FP-measured from Mar/17 to Aug/17:
 - Typical agile practices were adopted, with a multidisciplinary team including a Scrum Master and a Product Owner, 100% onsite with 2-week Sprints.
 - Presence of a Product Manager - Scalability
- Measurement at the Sprint level based on User Stories.
- The results made it possible to assess the performance of each sprint inside each project and **to compare each project to the overall performance of all projects based on the same approach.**

TI Métricas' Experience



The sprint performance of this project stayed within the limits identified by internal benchmarking studies.

In this project, the effort level spent in tests (QA), mainly from Sprint 3 on, had a negative effect on productivity.

- As a result, an action plan was created to determine the levels of test automation needed to reduce execution effort.

TI Métricas' Experience

Are Story Points incompatible with Function Points?

- The previous study showed it is possible to COMPARE results between different projects and sprints using FPs.
- Story Points represent RELATIVE measures of size, i.e., work within a specific project context since they quantify the view of a team.
- Story Points must be analyzed within the same context to determine and assess CAPACITY/VELOCITY.
- When the goal is to SUPPORT GOVERNANCE the utilization of FPs allows for comparative analyses (multiple distinct contexts).

TI Métricas' Experience

- **Client from the Finance industry**
- A pilot measurement study was run in Jul/17 to assess the productivity of agile projects – a 27-project sample.
- The agile framework adopted:
 - based on the Spotify model (Squads, Tribes, Chapters, Guilds) combined with SAFe,
 - strong interaction between teams due to physical proximity,
 - based on user story definitions extracted from JIRA

TI Métricas' Experience

- The data from this analysis showed the general performance of projects/sprints to be worse than the average/median of the national Market.

Client data

	Effort (h)	Size (FP)	Productivity (h/FP)
Average	669.33	25.03	33.51
Median	720.00	24.99	30.79
Std deviation	293.99	14.14	19.07

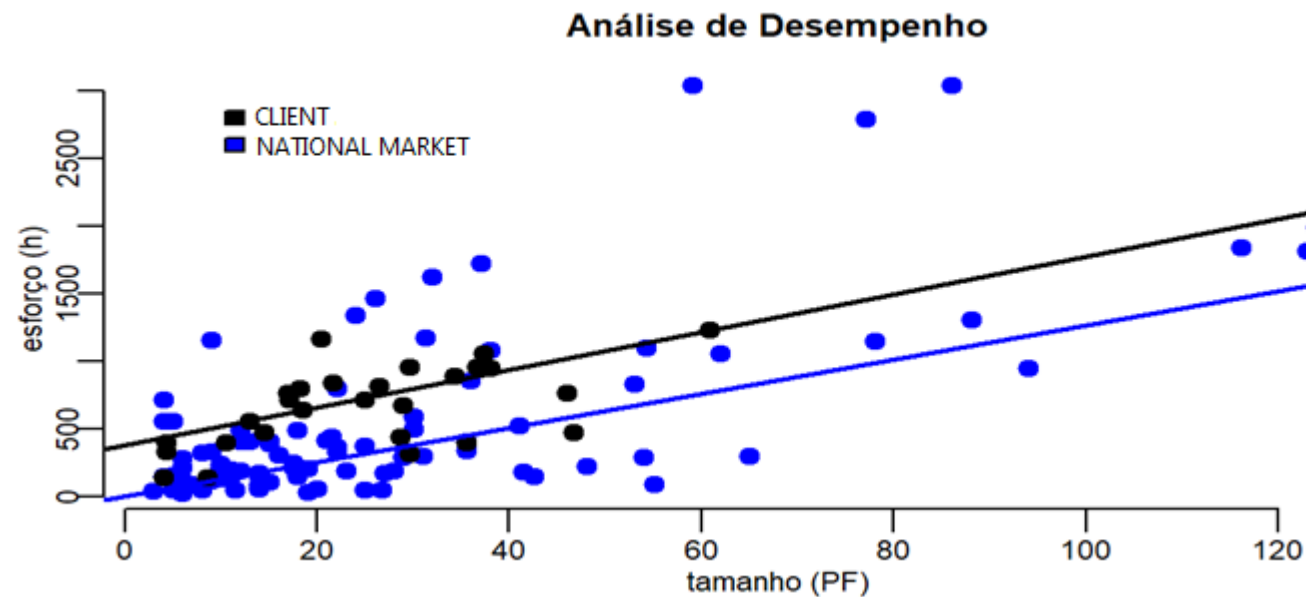
Market data

Productivity (h/FP)		
95% CI		
11.27	14.02	12.65

- Agile development methodology;
- Based on IFPUG CPM version 4 or later;
- Functional size < 140 FP;
- Data from financial organizations.

TI Métricas' Experience

- The regression model includes a constant equal to 378,88h for each project.
- Once the constant is removed project performance becomes compatible with market data:

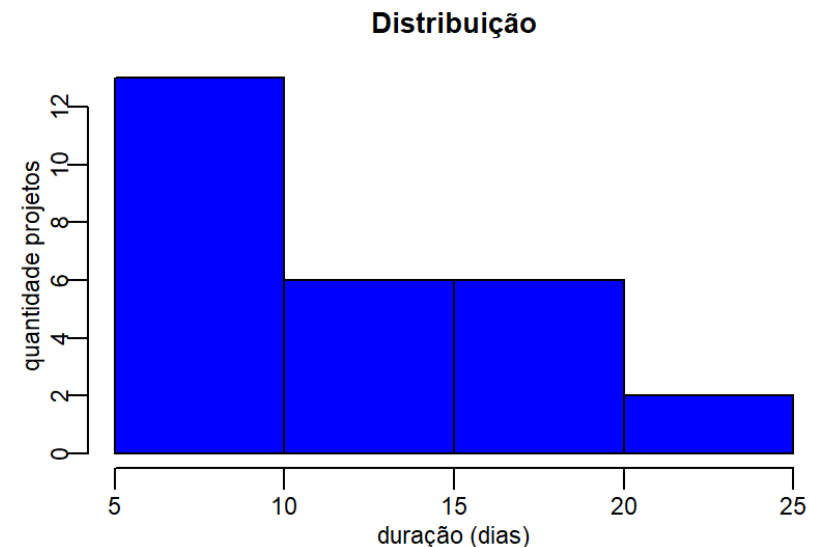
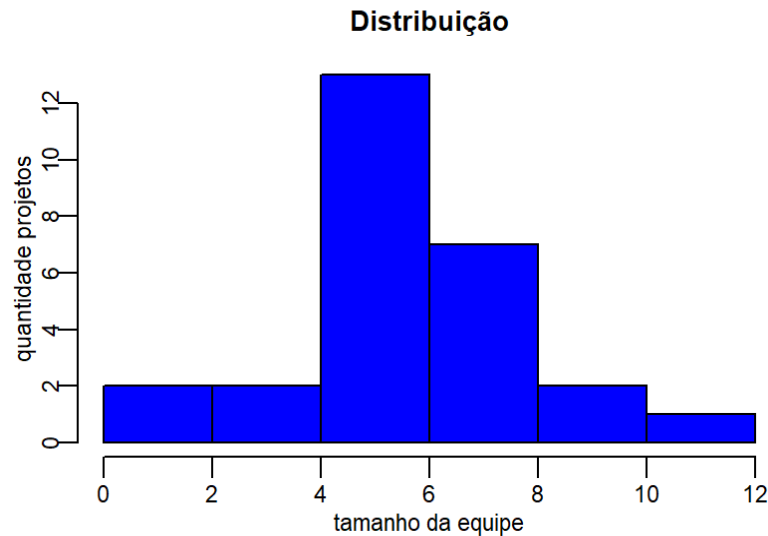


TI Métricas' Experience

- Some project characteristics were determined through sample analysis. This made it possible to create estimating models for the next sprints:

The average team size is 6.26 individuals and is independent of the functional size.

The minimum duration of a sprint is 7.4 days. Each FP added increases duration by .2 days



TI Métricas' Experience

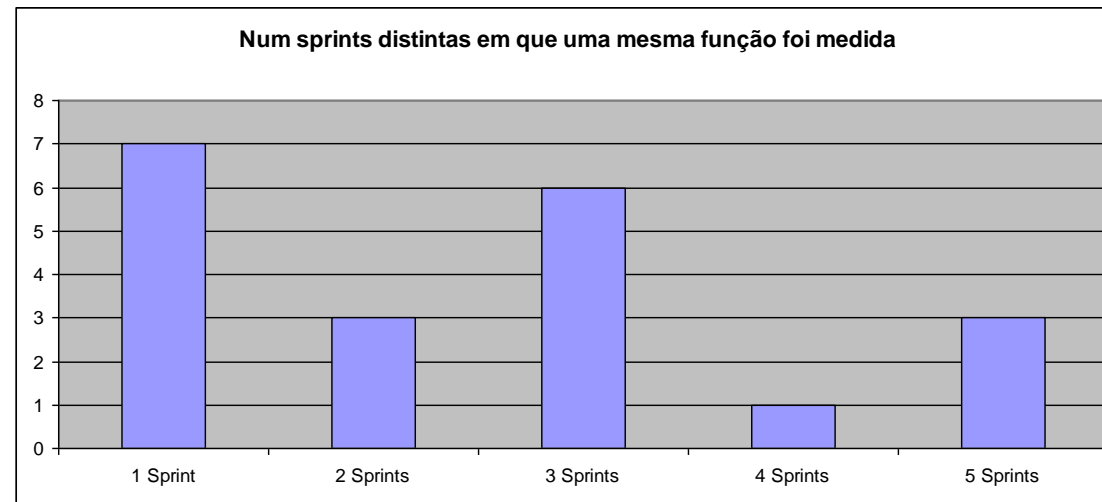
- Because of the useful results obtained the client asked TI Métricas **for a three-month extension of this work** (currently in progress), where new project/sprint samples will be analyzed and new findings will support the IT governance area in the decision to extend the agile approach to more projects.

TI Métricas' Experience

- **Client from the Finance industry (Government)**
- Development of a mobile front-end,
- One agile team applying Scrum concepts,
- Sprint duration varying between 2 and 4 weeks.
- Software factory compensation based on FPs at the end of each sprint
- Inputs obtained from Use Cases

TI Métricas' Experience

- The FP-size of the final product after 7 sprints was 116 FPs with 14 transactional functions and 6 data functions (a total of 20 functions):



- 13 of the 20 measured functions (65% of the total) were paid for more than once along the product's development.

Incremental Development or Change Requests?

TI Métricas' Experience

- How to compensate agile projects in Function Points?

Client view:

Compensation for completed function, i.e., when ALL the elements of business rules, data entities and fields are contained in the said function -> N sprints/iterations until the function is complete -> not economically viable for software factories!

Software factory view:

Compensation per sprint provides a constant cash flow -> function paid for N times -> economically costly for the client!

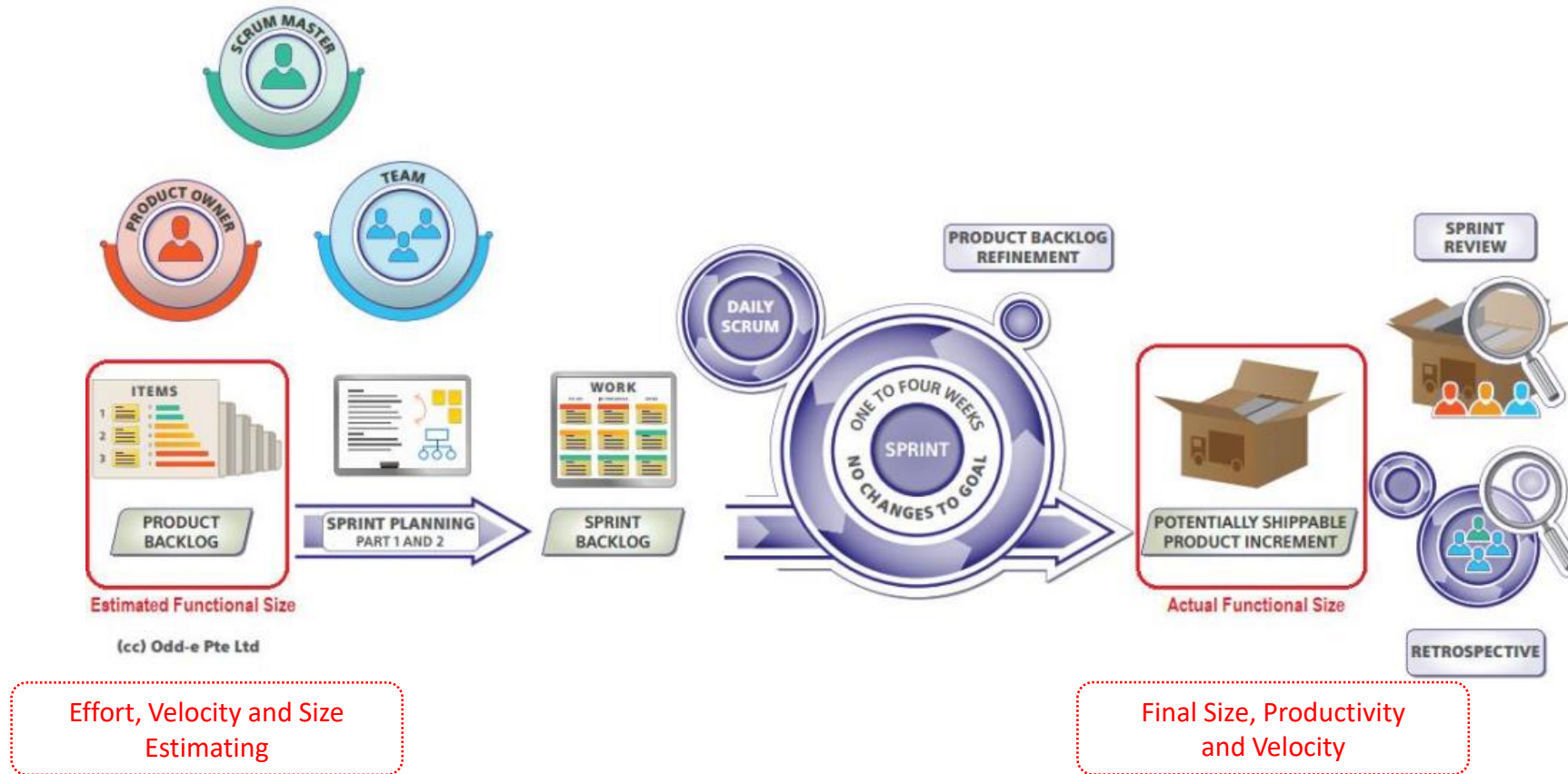
It is necessary to BALANCE the needs of both parties (client and supplier) when creating the contract,

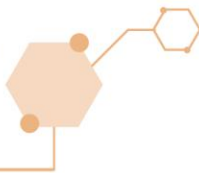


For example, using specific deflators to deal with functionality Refinement

TI Métricas' Experience

- When should one estimate/measure using Scrum?





TI Métricas' Experience

- When should one estimate/measure using Kanban?

Effort, Velocity and Size Estimating

Pool of Ideas	Feature Preparation		Feature Selected	User Story Identified	User Story Preparation		User Story Development		Feature Acceptance		Deployment	Delivered
Epic 431	3 - 10		2 - 5	30	15		15		8		5	Epic 294
Epic 478	Epic 444	Epic 662	Epic 602			Story 602-02	Story 602-06	Story 602-05	Epic 401	Epic 609	Epic 694	Epic 386
Epic 562	Epic 589		Epic 302	Story 302-03	Story 302-01	Story 302-07	Story 302-09	Story 302-04	Epic 468	Epic 577	Epic 276	Epic 419
Epic 439	Epic 651		Epic 335	Story 302-02	Story 302-08	Story 302-08			Epic 362		Epic 339	Epic 388
Epic 329			Epic 512	Story 335-09	Story 335-10	Story 335-04	Story 335-05	Story 335-08			Epic 521	Epic 287
Epic 287				Story 335-08	Story 335-01	Story 335-03	Story 335-02	Story 335-07			Epic 582	Epic 274
Epic 606	Discarded			Story 512-04	Story 512-07	Story 512-02	Story 512-01					
	Epic 511	Epic 213		Story 512-05	Story 512-06	Story 512-05						
	Epic 221											

Final Size, Productivity and Velocity

Policy
Business case showing value, cost of delay, size estimate and design outline.

Policy
Selection at Replenishment meeting chaired by Product Director.

Policy
Small, well-understood, testable, agreed with PD & Team

Policy
As per "Definition of Done" (see...)

Policy
Risk assessed per Continuous Deployment policy (see...)



What about 2018 year?

- Cases #1 & #2 Clients from the Finance industry – Continuous services: supplier proposal analysis and 2018 performance assessment to define delivery goals for 2019
- Case #3 Client from the Insurance industry – Improvement actions based on the analysis of productivity indicators, velocity, sprint complexity, defects and the ability to respond to user functional requirements evolution
- Case #4 Client from the Finance industry – As of 1/2/2018 an organizational “Productivity” team was created to FP-measure all deliveries, track indicators (velocity, productivity, defects), maintain the historical database, and estimate productive capacity for 2019.
- Increasing number of requests from clients interested in demonstrating and communicating results obtained with agile methods in a standardized way (clients from telecom, entertainment, retail)



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