Navigating the Fog: A Story Pointing Framework for Clinical Programming Effort

Sarita Singh, Veramed, Bengaluru, India

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PharmaSUG SDE
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Abstract

Clinical programming often operates in environments where data quality, evolving SAPs, and shifting timelines create significant uncertainty. Hour-based estimates rarely capture this volatility, leading to stress, inefficiency, and misaligned expectations. This poster outlines a story-pointing —an Agile estimation technique—offers a more reliable alternative by measuring relative effort rather than time. It moves the focus from "how long will this take?" to "how complex is this task?" using a refined Pharma-Fibonacci scale and three drivers: Data Integration Complexity, Derivation Density, and Specification Stability. By shifting from time-based forecasting to effort-based estimation, clinical programming teams can enhance predictability, reduce rework, improve sprint planning, and align stakeholder expectations.

Introduction

Agile methodologies have gained significant adoption within clinical data science teams, particularly for iterative deliverables such as SDTM datasets, ADaM derivations, and statistical outputs. Story Pointing—an Agile estimation approach—assigns "points" based on relative effort, uncertainty, and complexity, enabling teams to estimate work without reliance on hours. Unlike traditional estimation models, story points allow developers of varied experience levels to evaluate work consistently and collaboratively.
This poster presents a deliberate adaptation of story-pointing methods to the clinical reporting lifecycle, enabling teams to anticipate challenges earlier and maintain momentum even when conditions change.

The Case for Story Pointing in Clinical Programming

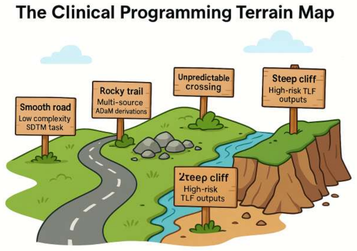
Why time-based estimates break down?

- Raw datasets are rarely analysis-ready; unexpected cleaning or restructuring increases effort.
- Complex derivations carry hidden layers of logic that expand as specifications evolve.
- SAP revisions can shift or invalidate earlier assumptions, demanding rework.
- Differences in team experience make hour estimates inconsistent and difficult to calibrate.
- The pressure to "guess" accurately often leads to overcommitment and burnout.

Impact on teams and delivery

- Inefficient sprint planning
- Reduced predictability for stakeholders
- Increased last-minute crunch
- Difficulty prioritising high-impact work
- Erosion of technical and emotional bandwidth

The Clinical Programming Terrain Map



How story points address these challenges

- Focus on effort, risk, and uncertainty instead of duration.
- Enable meaningful comparison across tasks (e.g., a "5-point" ADaM derivation vs. "3-point" TLF shell update).
- Improve sprint planning accuracy using historical velocity.
- Reduce stress from time-tracking and hour-guessing.

A Strategic Story-Pointing Framework

A three-dimension model

1. Data Integration Complexity
Evaluates dataset volume, quality, alignment effort, and transformation challenges.
2. Derivation Density
Looks at the layering of logic, conditional rules, algorithmic transformations, and cross-domain dependencies.
3. Specification Stability
Assesses volatility in SAPs, shells, and sponsor direction, enabling early anticipation of rework.

Why this works

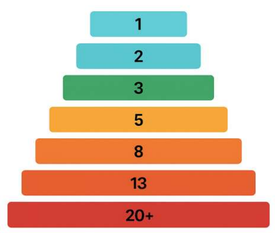
Removes precision pressure from hour estimates
Anchors team discussions in shared understanding of effort
Helps identify high-risk tasks early

Supports clearer sprint commitments
Creates a predictable rhythm even under shifting requirements.

The Pharma-Fibonacci approach

Using a non-linear numeric pattern helps teams recognise meaningful jumps in complexity without over-focusing on numeric precision.

Pharma-Fibonacci Story Point Scale



Points	Description	Example Task
1–2	Minimal effort; stable; single dataset	Minor TLF format fix
3–5	Moderate complexity; few derivations	New SDTM domain with clean raw data
8–13	High complexity; dependencies; changing specs	ADaM efficacy derivations
20+	Highly uncertain or volatile	New endpoint requiring cross-functional interpretation

How Different Experience Levels Interpret Story Points (Not mapping hours, instead comfort level)

Story Points	Junior Programmer	Mid-Level Programmer	Senior Programmer
1–2	Learning task; guided	Quick standalone	Instant turnaround
3–5	Requires support	Routine	Simple
8–13	Complex; paired programming	Challenging	Manageable
20+	Not ideal; needs senior leadership	Requires collaboration	High-risk even for senior

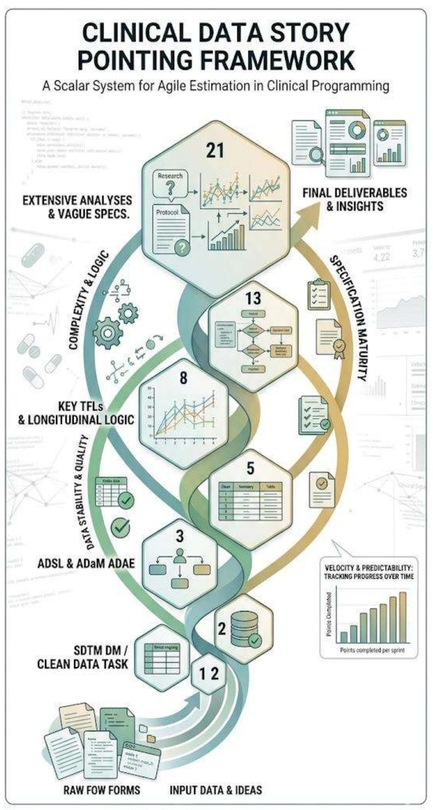
A "Checklist" for Estimating Story Points

Programmers can ask:
How many datasets?
Any cross-domain joins?
Complex conditional logic?
SAP expected to change?
Number of derived variables?

What Improved?

- **Velocity Tracking Across Sprints**

Story-point velocity provides insight into how a clinical programming team improves estimation accuracy and delivery stability over time. By comparing story points completed vs. planned across sprints, teams can identify trends, adjust capacity, and refine estimation techniques.



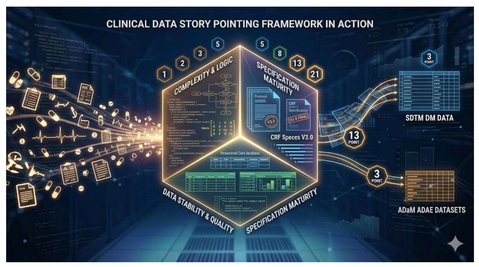
- **Risk Flags Based on Story Points**

High-point stories → early attention
Mid-range stories → dependencies
Low-point stories → quick wins

- **Reduced timeline slippage**
- **Better cross-functional alignment**
- **Consistent effort scoring across studies and teams**

Conclusions

Story-pointing replaces the pressure of predicting hours with a calmer, more grounded way of estimating effort. It creates space for honest discussions, realistic planning, and more meaningful collaboration with cross-functional partners. Over time, consistent use of story points enhances delivery accuracy, strengthens sprint planning, and supports continuous improvement through retrospective calibration.
By anchoring estimation in effort rather than time, clinical programming teams can navigate complexity more confidently, protect their energy during high-pressure cycles, and deliver consistently strong outputs that stand up to scientific and regulatory scrutiny.



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Contact Information

Your comments and questions are valued and encouraged. Contact the author at:

Name: Sarita Singh
Company: Veramed Data Services Pvt. Ltd.
E-mail: Sarita.singh@veramed.com