

Kanban – La seule méthodologie quantitative de gestion de projet agile

IIBA Montréal – Mercredi 23 Novembre 2016

Daniel Doiron – the agile agonist™

email : Daniel@agileagonist.com

Twitter: [@agileagonist](https://twitter.com/agileagonist)

Introduction – Pourquoi êtes-vous ici ?

Puissantes, uniques et très efficaces, les connaissances Kanban peuvent devenir les vôtres. Cette présentation est d'intérêt pour:

- La haute direction pour qu'elle puisse respecter ses engagements stratégiques**
- Le gestionnaire afin qu'il puisse répondre de façon prévisible aux questions de la haute direction et prendre avec confiance les décisions qui s'imposent**
- Le travailleur intellectuel afin qu'il puisse désamorcer les situations abusives de charge de travail**

Daniel Doiron – the agile agonist™



Introduction

- Le fonctionnement d'une file d'attente et des travaux en cours est un pilier de la maîtrise de Lean Kanban car il permet d'optimiser la fluidité et la détection des goulots d'étranglements
- En génie, l'étude des files d'attente remonte à 1919 dans le cadre des applications de téléphonie

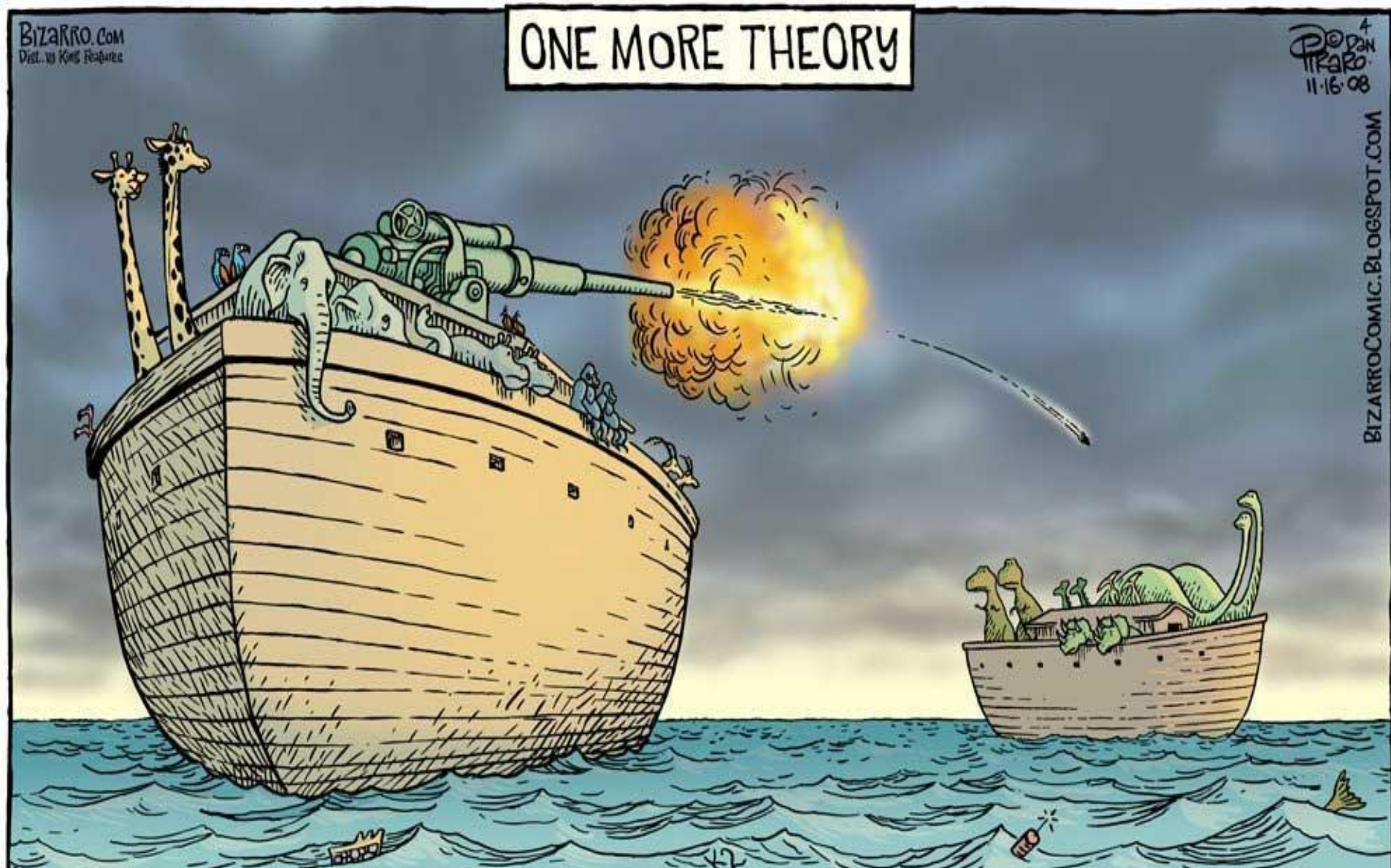
Table des Matières

Agenda

1. Théories et méthodologies
2. Le nouveau triangle
3. Service au volant
4. Loi de Little
5. CFD
6. Variabilité
7. Les métriques Kanban
8. Analyse tableau Kanban
9. Modèle économique de 1913



1) Une théorie parmi tant d'autres !



1) Piliers de la théorie Kanban

Edwards Deming



Eli Goldratt



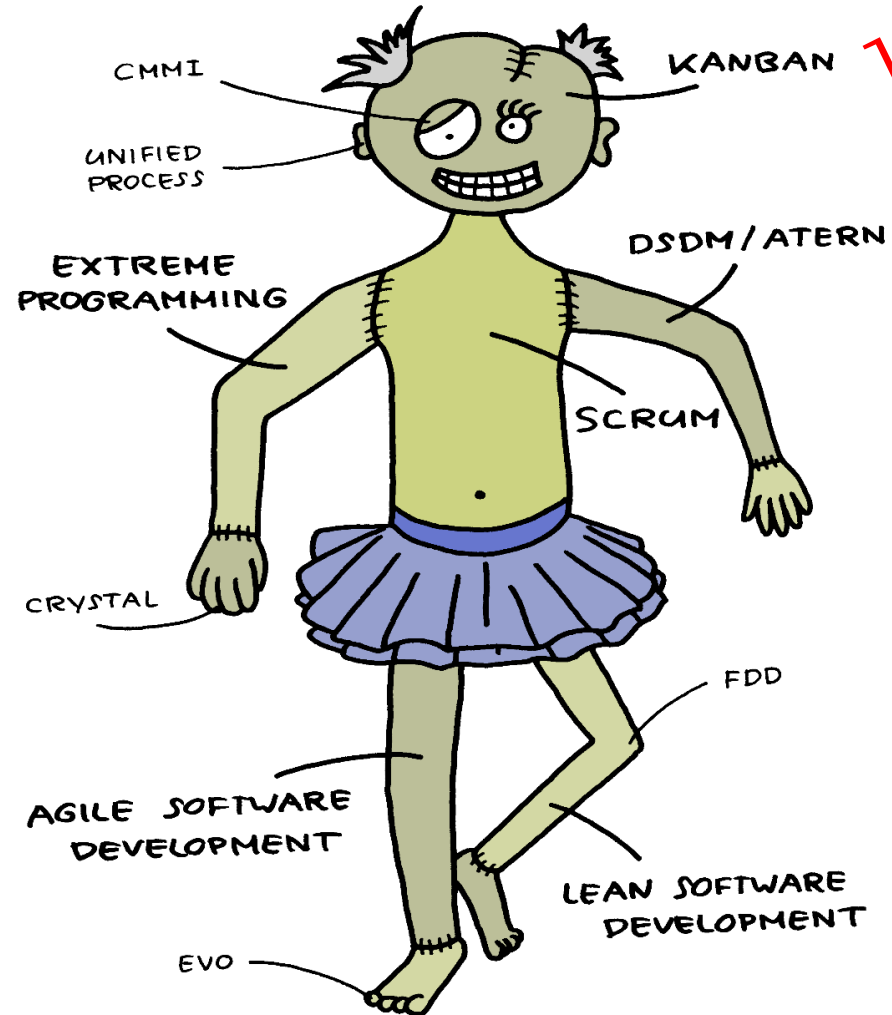
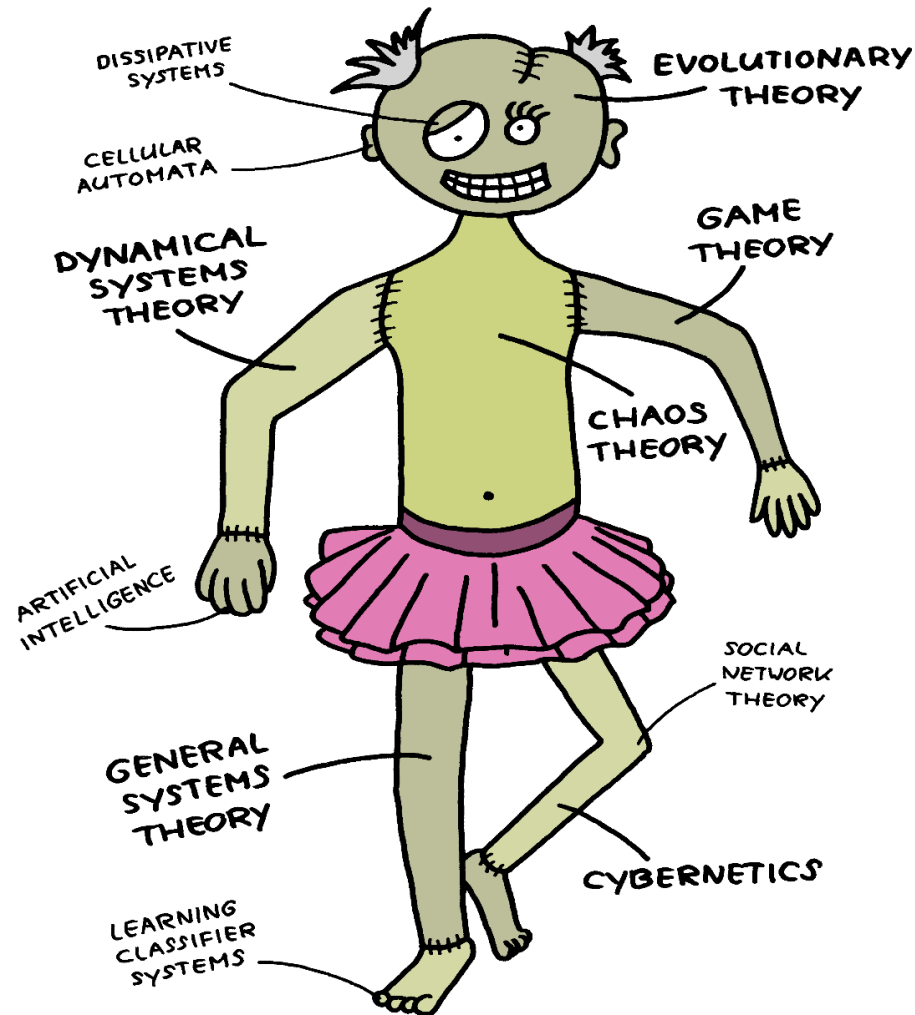
Peter Drucker



Taiichi Ohno



1) Survol des méthos agiles - Appelo

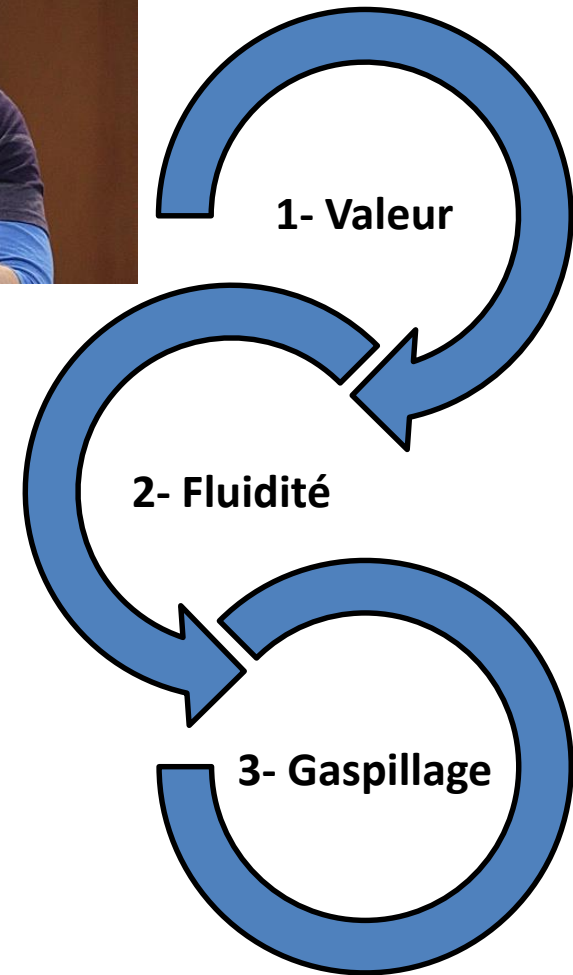
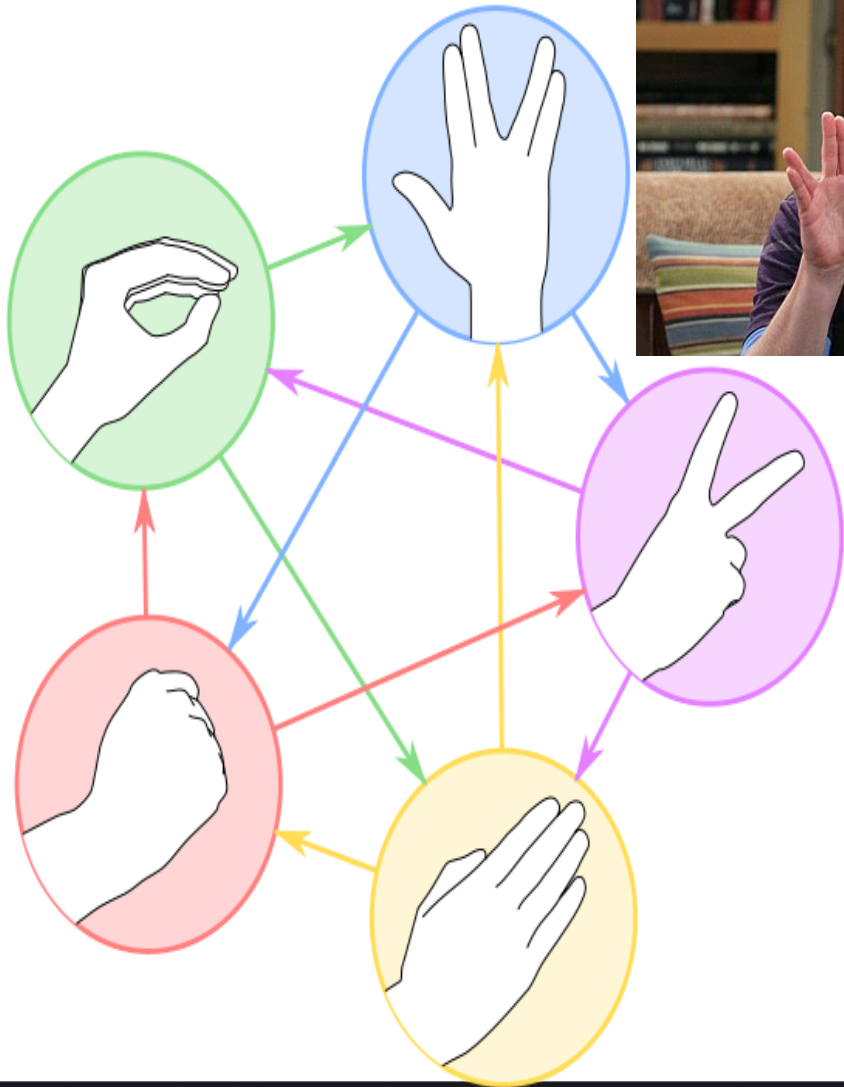


1) Kanban

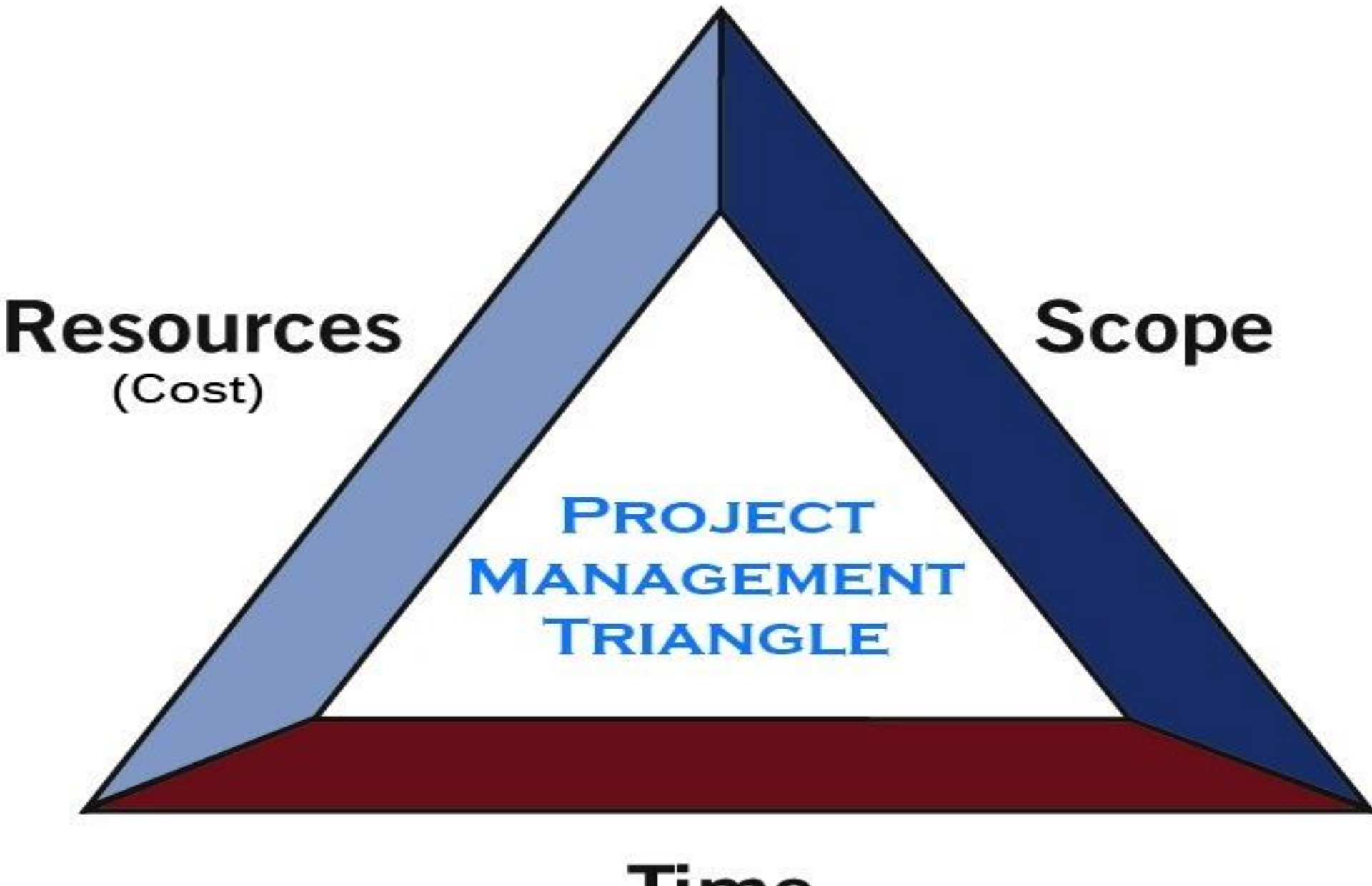
"Kanban is not a playbook; rather it teaches teams how to evolve their existing playbook. In this sense, it differs from other agile frameworks and methodologies."

"*This* is the essence of agile: teams do not become agile by adopting a methodology. Rather, true agility means that teams are constantly working to evolve their processes to deal with the particular obstacles they are facing at any given time."

1) Kanban est une approche Lean



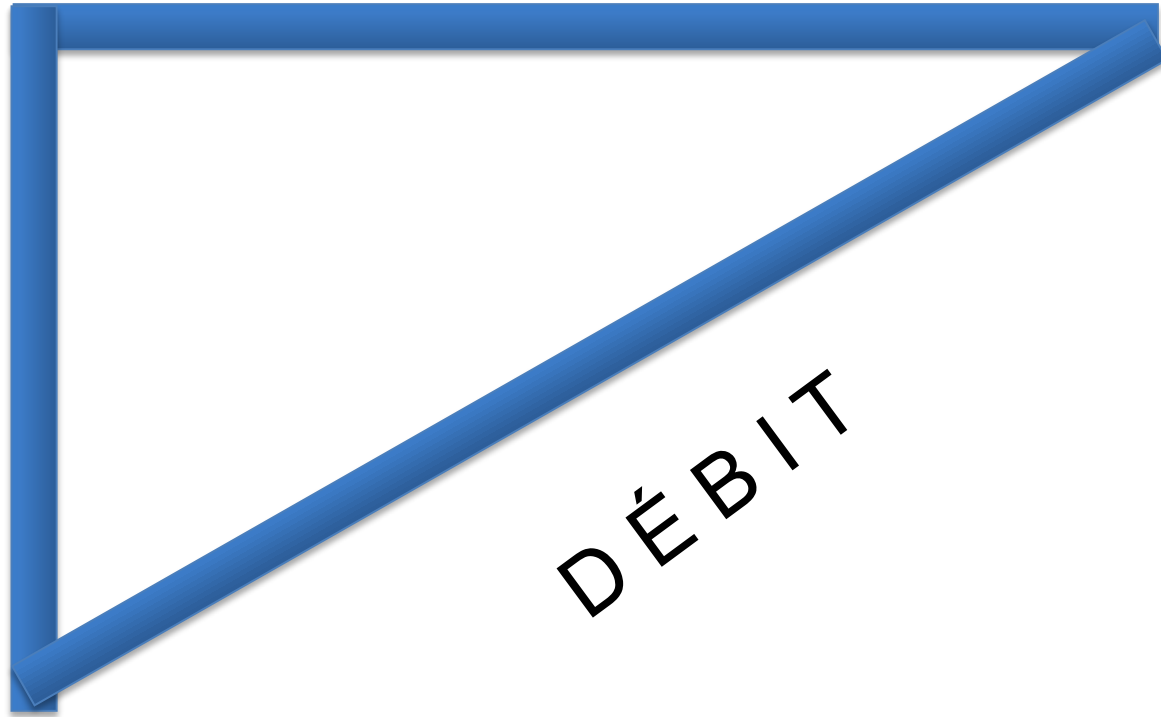
2) Un triangle bien connu



2) GÉOMÉTRIE KANBAN !

TRAVAUX EN COURS

TEMPS DE CYCLE (Délai de livraison)

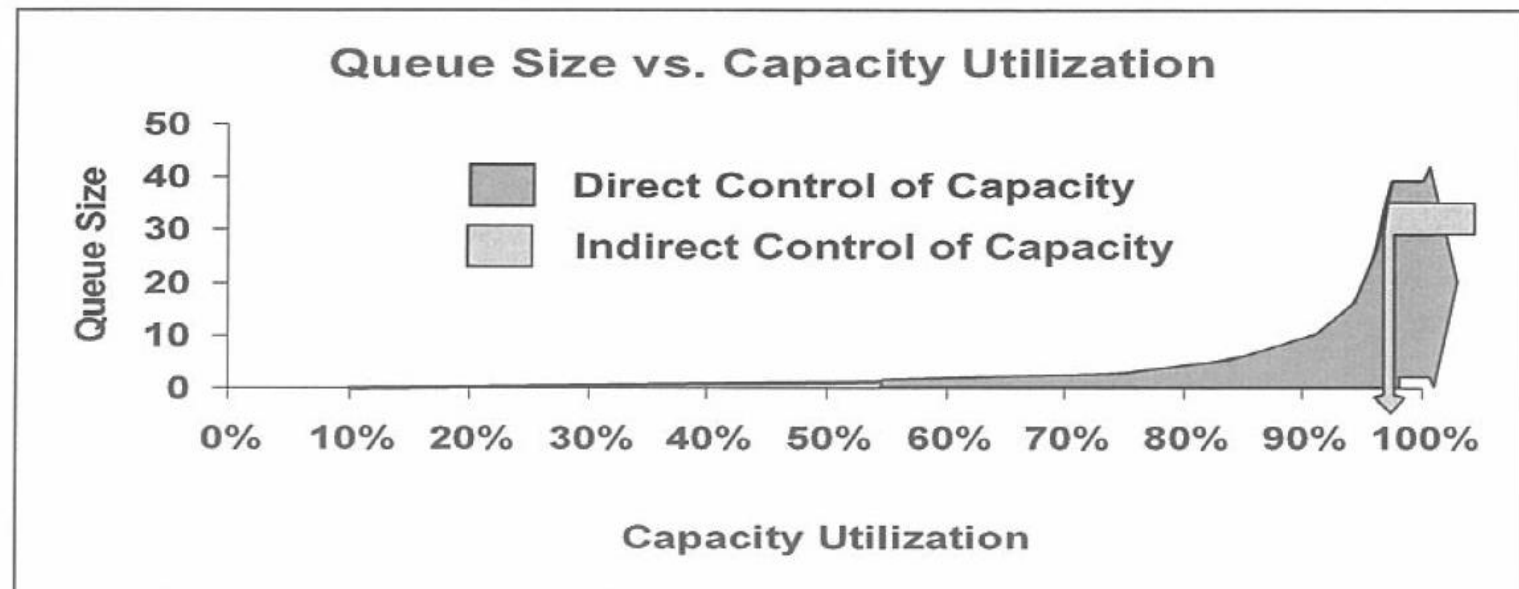


2) Les autres attendent leur tour ... a l'extérieur



2) Système saturé à 80%et plus

Control Queues Not Capacity Utilization (Q13)



Note: Assumes M/M/1/Infinite Queue

2) Système saturé à 80%et plus

- **At 90 percent utilization:**
 - **We will find a resource immediately available 10 percent of the time.**
 - **There will be an average of 9 jobs in the system.**
 - **On average we will have 8.1 items in line in front of us.**
 - **90 percent of our time in the process will be queue time.**
 - **Our overall cycle time will be 10 times the value-added time.**

Pourquoi la gestion des files d'attentes est importante !

Why Queues Matter (Q2)

Managing Queues is the key to improving product development economics.

Queues Create...

Longer Cycle Time

Increased Risk

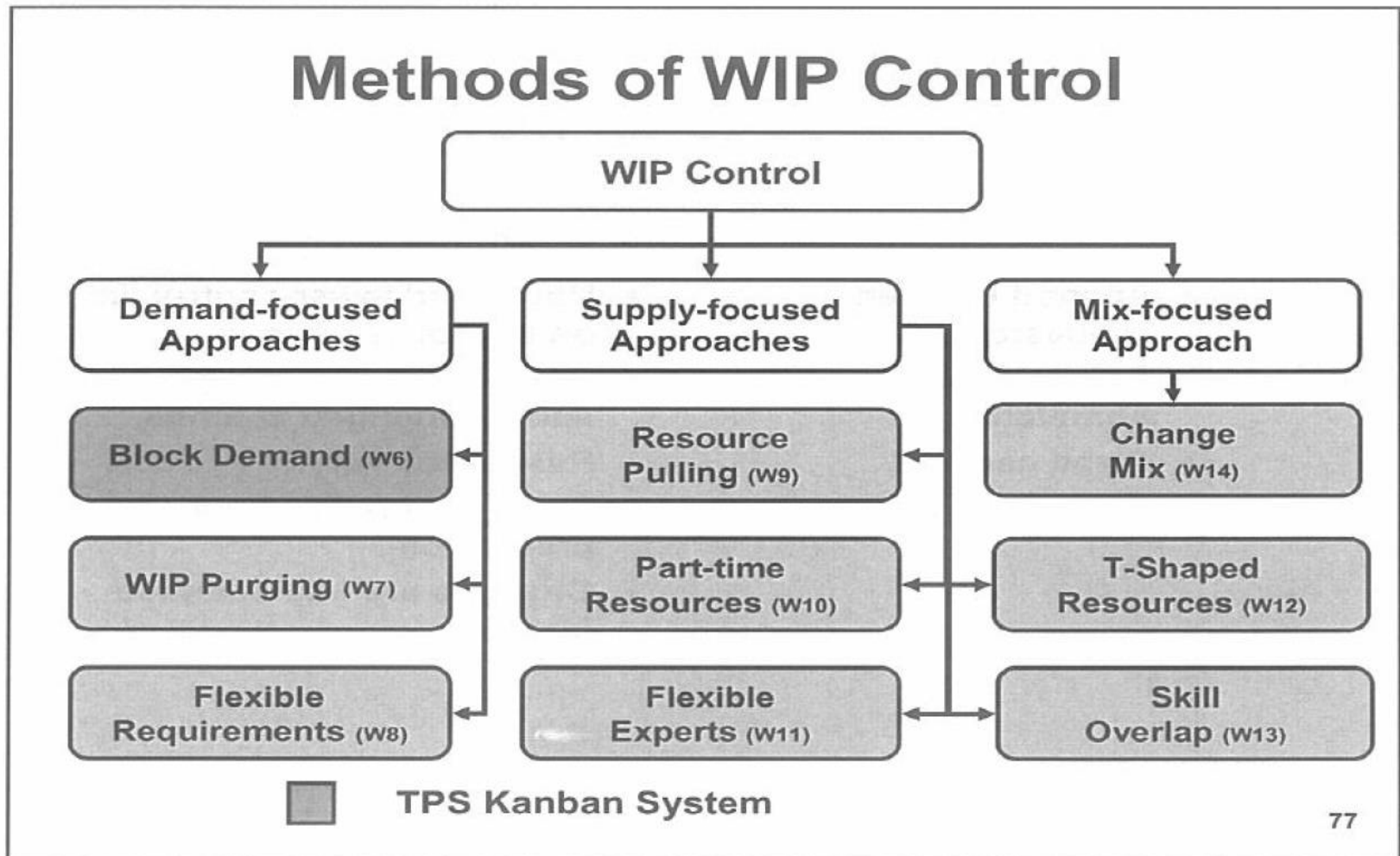
More Variability

More Overhead

Lower Quality

Less Motivation

2) Gestion de la demande et de l'offre – WIP Control



2) Gestion de la variabilité – WIP Constraints

6: Applying WIP Constraints: Summary

- WIP constraints constrain queues and cycle time.
- WIP can be constrained locally, regionally, or globally.
- WIP constraints trade utilization and blocking for cycle time savings.
- Variability can lead to unexpected WIP excursions.
- We can respond a rising WIP level by either changing demand, resources, or mix.
- Flexible resources can respond to emerging queues.
- Make downstream queues visible to feeding processes.
- The Internet is a much richer idea source of advanced solutions than the TPS.

2) SPICE GIRLS, CAPACITÉ et KANBAN



2) MORALE IIBA – SURVEILLER LA VARIABILITÉ !!



3) Service au volant



3) Un peu d'anglais pour ce qui suit

Débit = Throughput

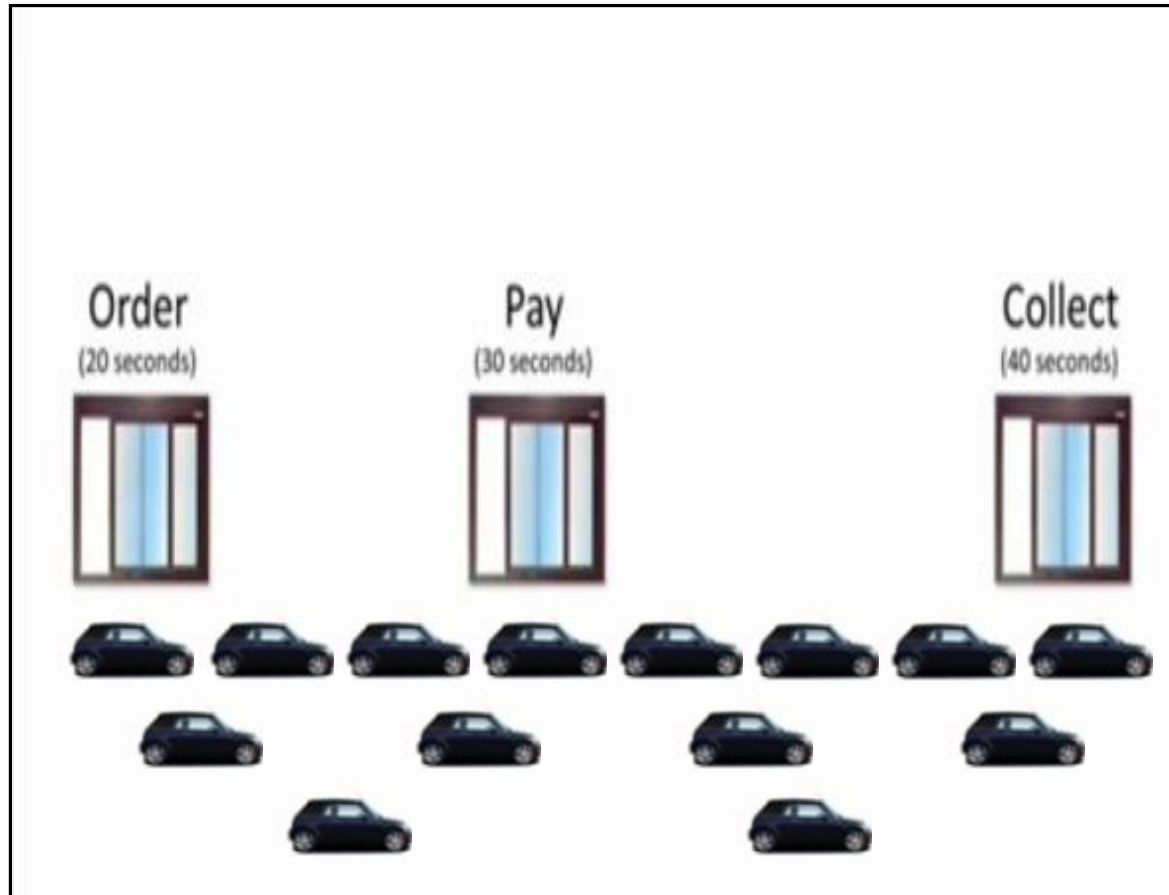
Temps de cycle (délai de livraison) = Cycle Time

Travaux en cours (TEC) = Work in Process (WIP)

Quel niveau de TEC optimal pour a) cycle et b) débit ?

Imaginez un service à l'auto Mc Donald en Angleterre !

TEC – Travaux en cours



3) On route !

Animation voiture – WIP: Why limiting work in process makes sense

<https://www.youtube.com/watch?v=W92wG-HW8gg>

ANIMATION

3) Analyse – Service au volant

Voitures	TEC - Travaux en cours	Temps de cycle en secondes	Débit (Client servi par seconde)
1	1	90	.011
2	2	90	.022
3	3	120	.025
4	4	160	.025
5	5	200	.025

Quel serait le débit avec un TEC de 6,7 ou 8 voitures ?

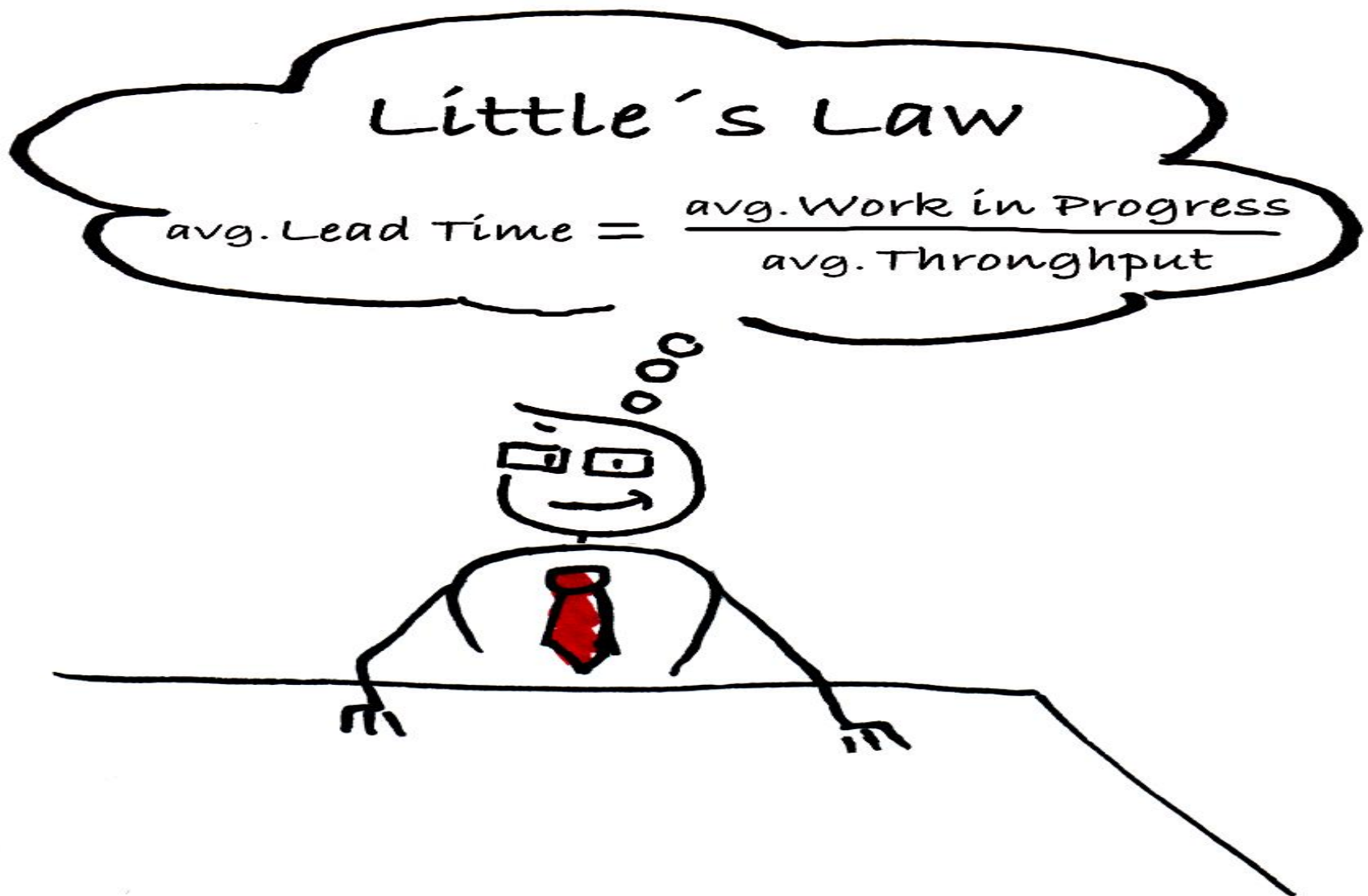
4) Loi de Little vous dites ?

Temps de cycle = TEC/Débit ou bien $A = B/C$

Voitures	B) TEC - Travaux en cours	A) Temps de cycle en secondes	C) Débit (Client servi par seconde)
1	1	90	.011
2	2	90	.022
3	3	120	.025
4	4	160	.025
5	5	200	.025
6	6	240	.025
7	7	280	.025
8	8	320	.025



4) La loi de Little et théorie des files d'attente

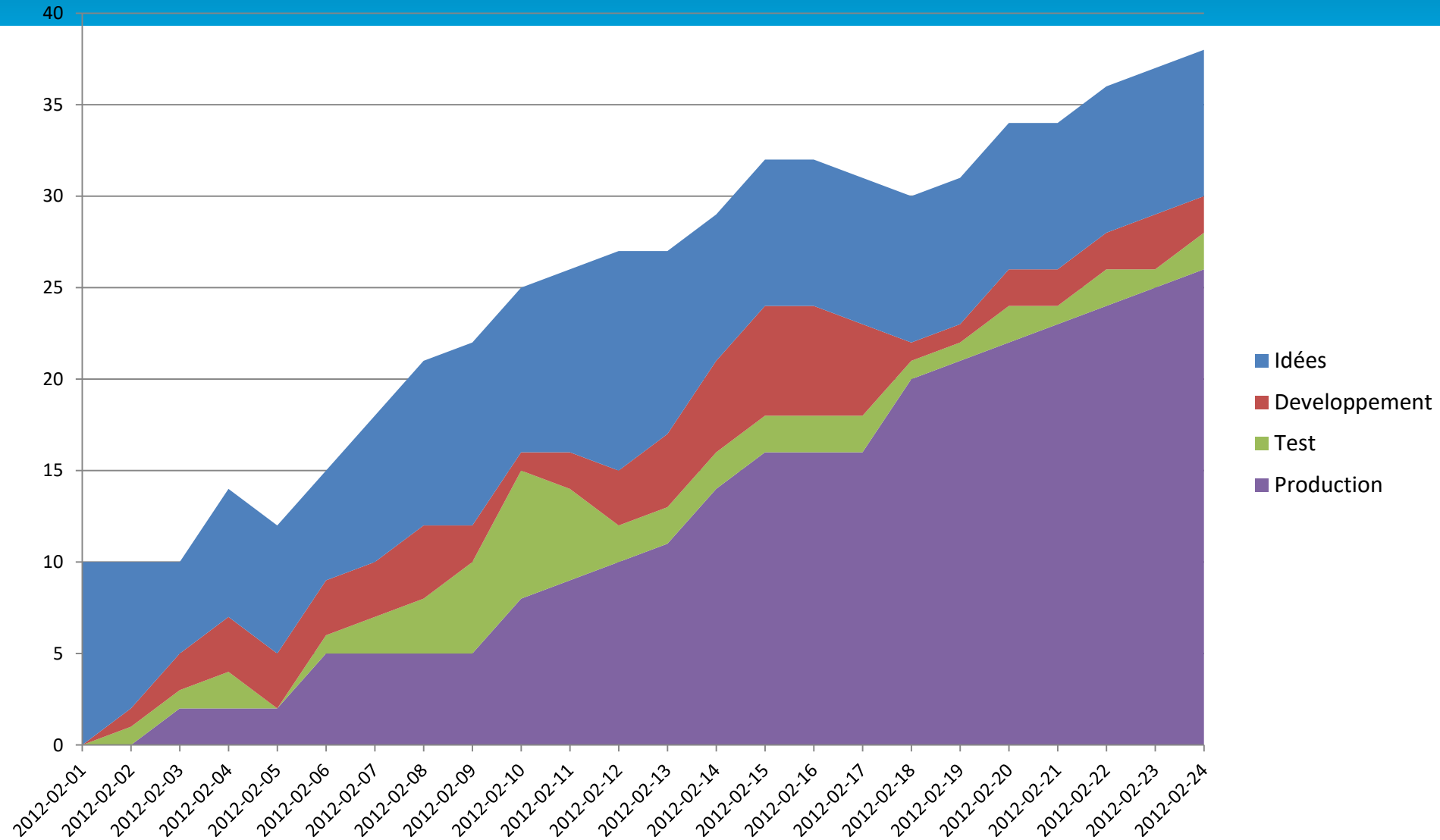


4) La loi de Little - 1963

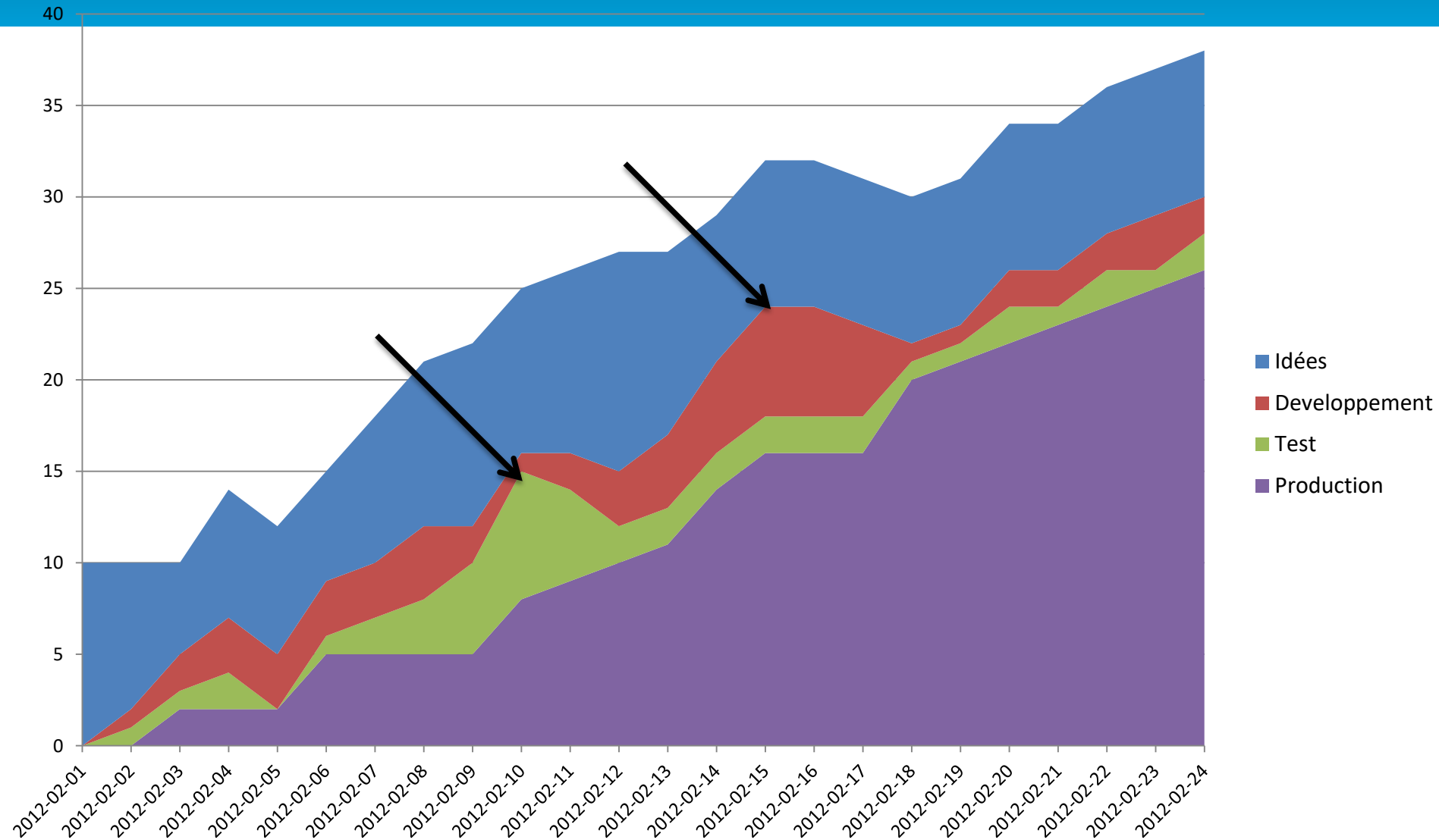
**Temps de cycle = Travaux en
cours/Débit**



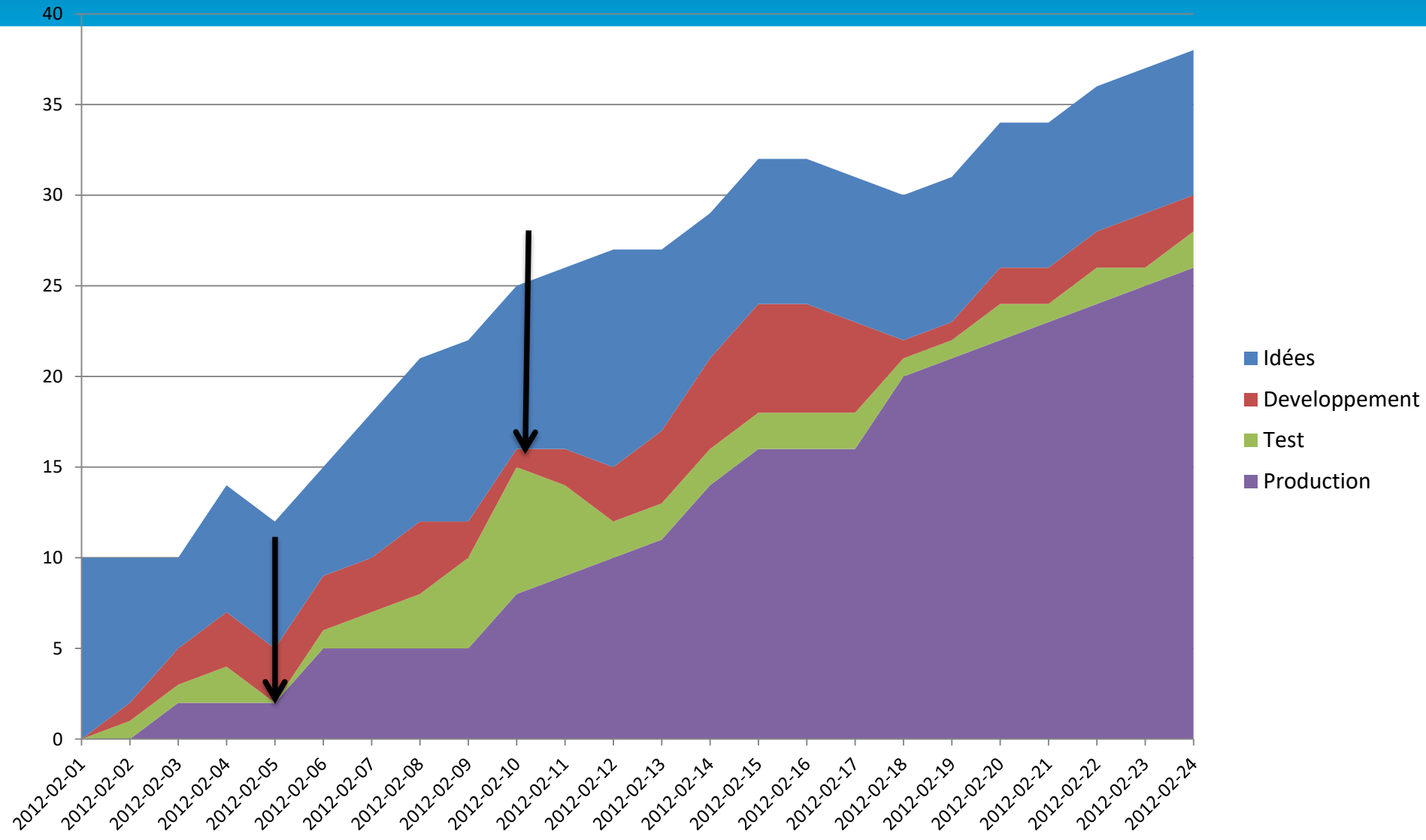
5) CFD – Cumulative Flow Diagram



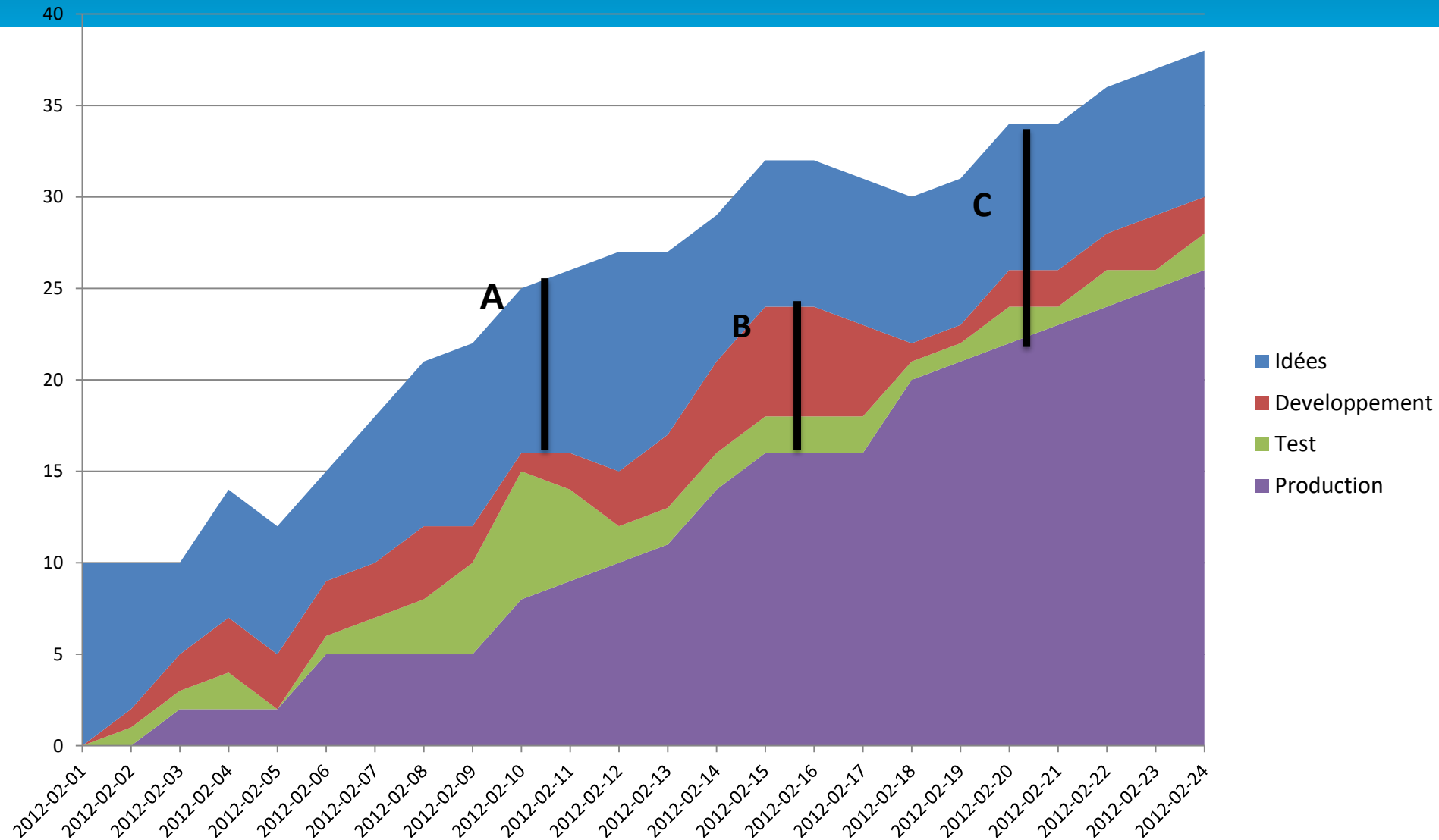
5) CFD – Goulots étranglements



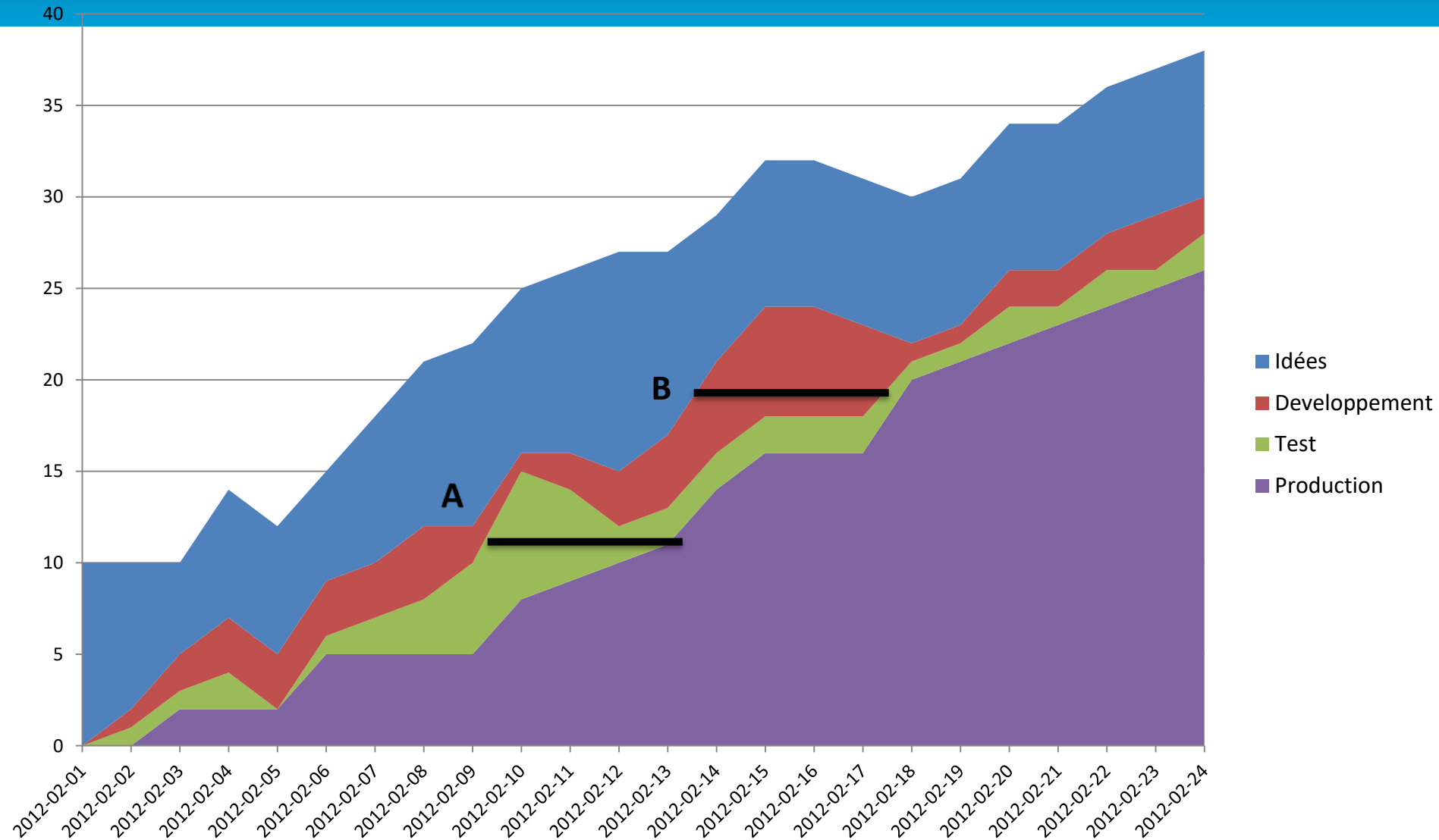
5) CFD – Carence, pénurie



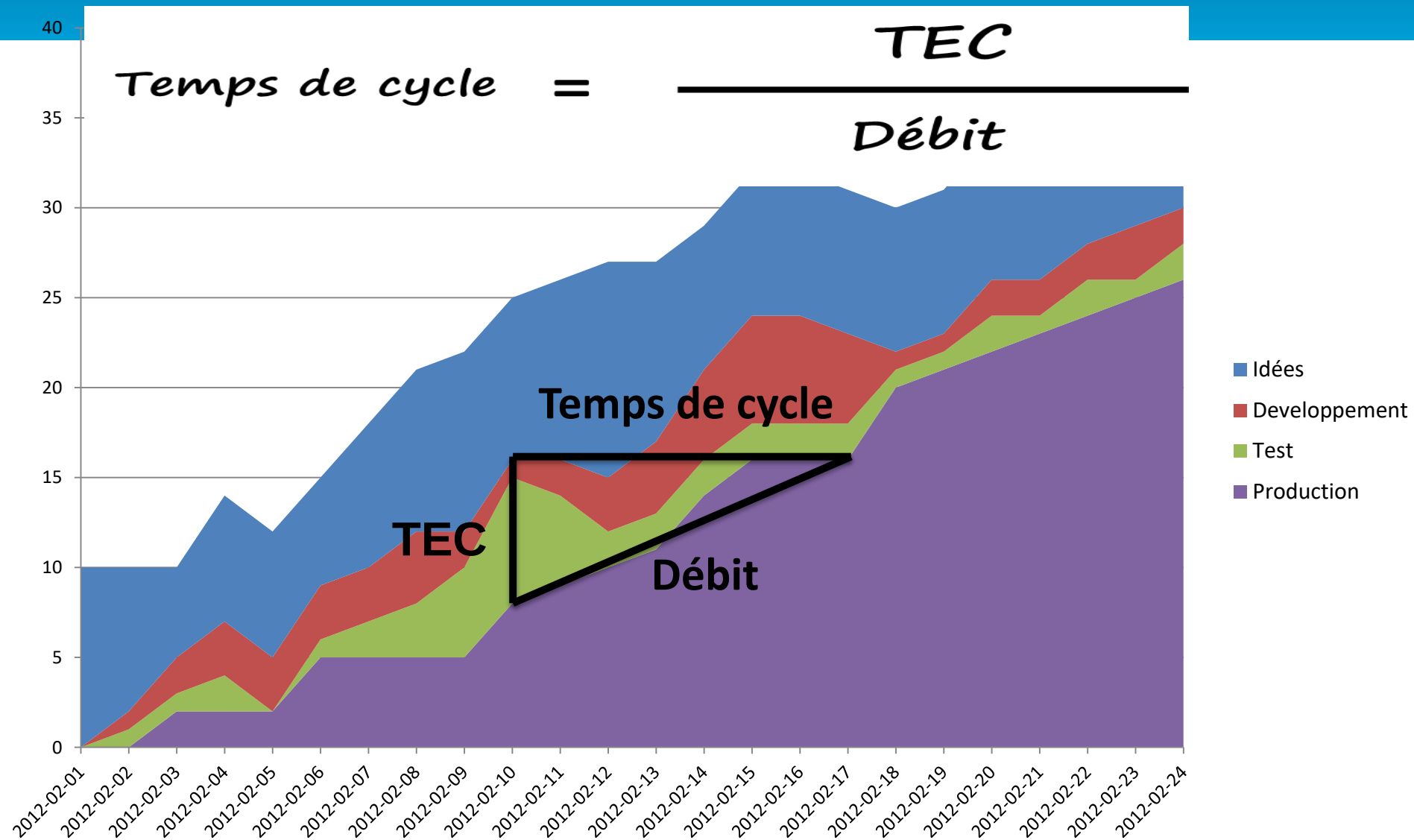
5) CFD – Travaux en cours (TEC)



5) CFD – Temps de cycle (livraison)



5) CFD – Loi de Little



6) La variabilité dans la vie



6) La variabilité dans la vie

Sources of independent variability :

- Variability can be found in the form of demand,
- the nature and complexity of the work,
- associated risks,
- the cost of delays,
- outside expectations and influences,
- individual performance,
- team performance,
- interpersonal relationships,
- skill availability,
- outside dependencies, and the list goes on.

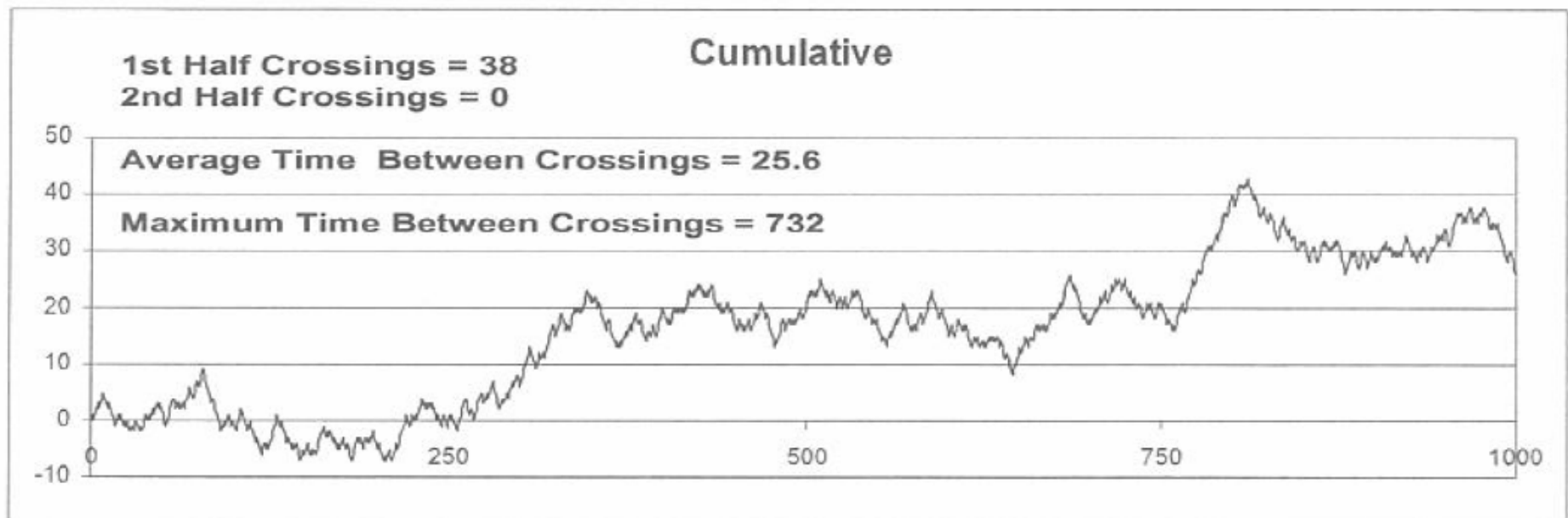


6) La variabilité dans la vie

- Je joue à pile ou face avec une pièce de un dollar que je tire 1,000 fois en l'air
- Si j'ai pile j'additionne un dans un compteur. Si j'ai face je soustrais un. Le compteur est mis à zéro au départ
- Combien de fois le compteur va-t-il traverser l'axe du chiffre 0 pour aller soit en territoire positif, soit en territoire négatif sur 1,000 essais?

6) La variabilité dans la vie

One Thousand Coin Tosses (Q15)



Note: +1 for each head, -1 for each tail

Based on example from “Introduction to Probability Theory and Its Applications”, by William Feller. John Wiley: 1968

Average longest sojourn = 626 flips; Average crossings = 24.25.



6) Solution – REMISE À ZÉRO



6) La variabilité dans la vie



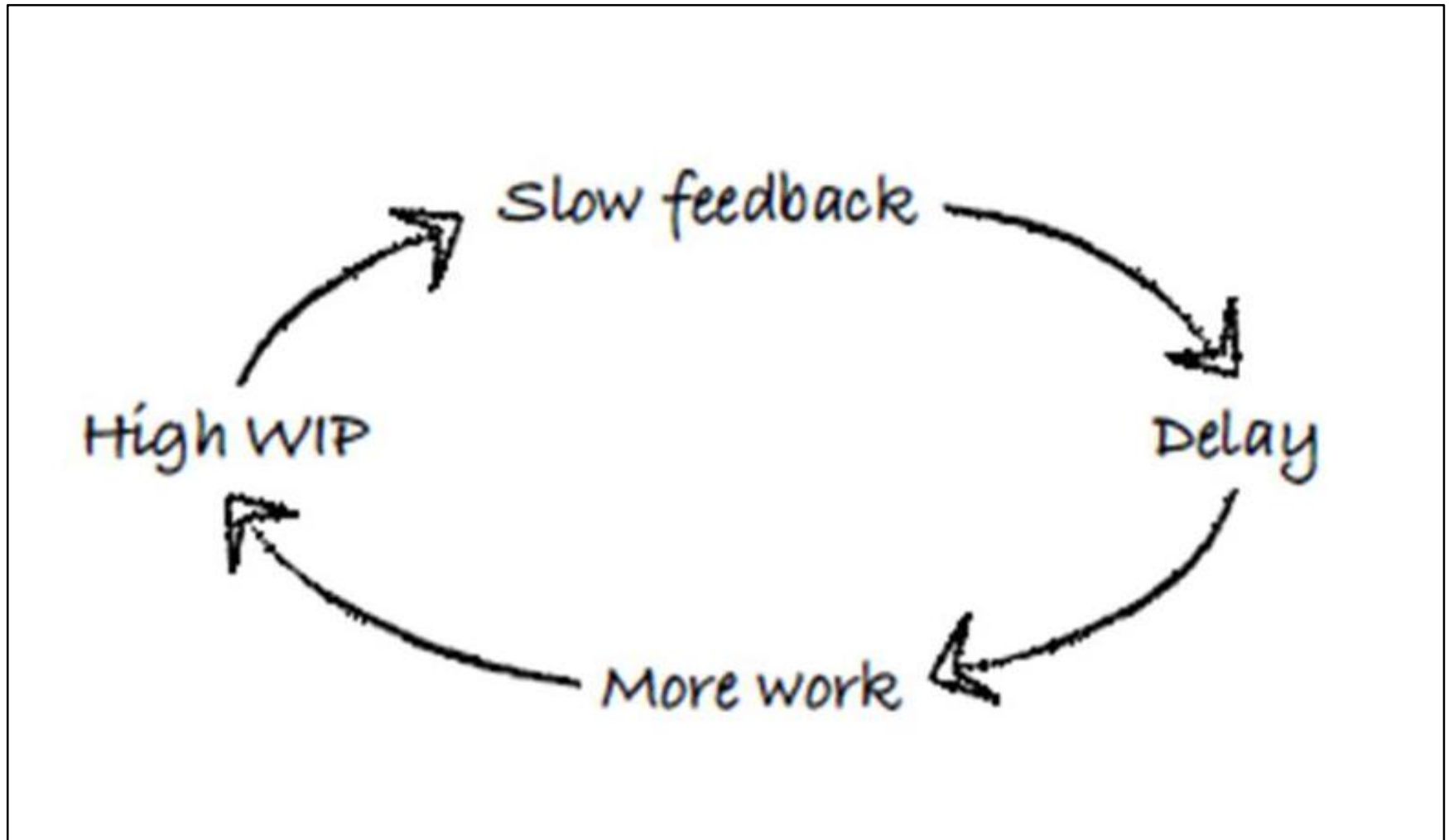
6) Solution – REMISE À ZÉRO



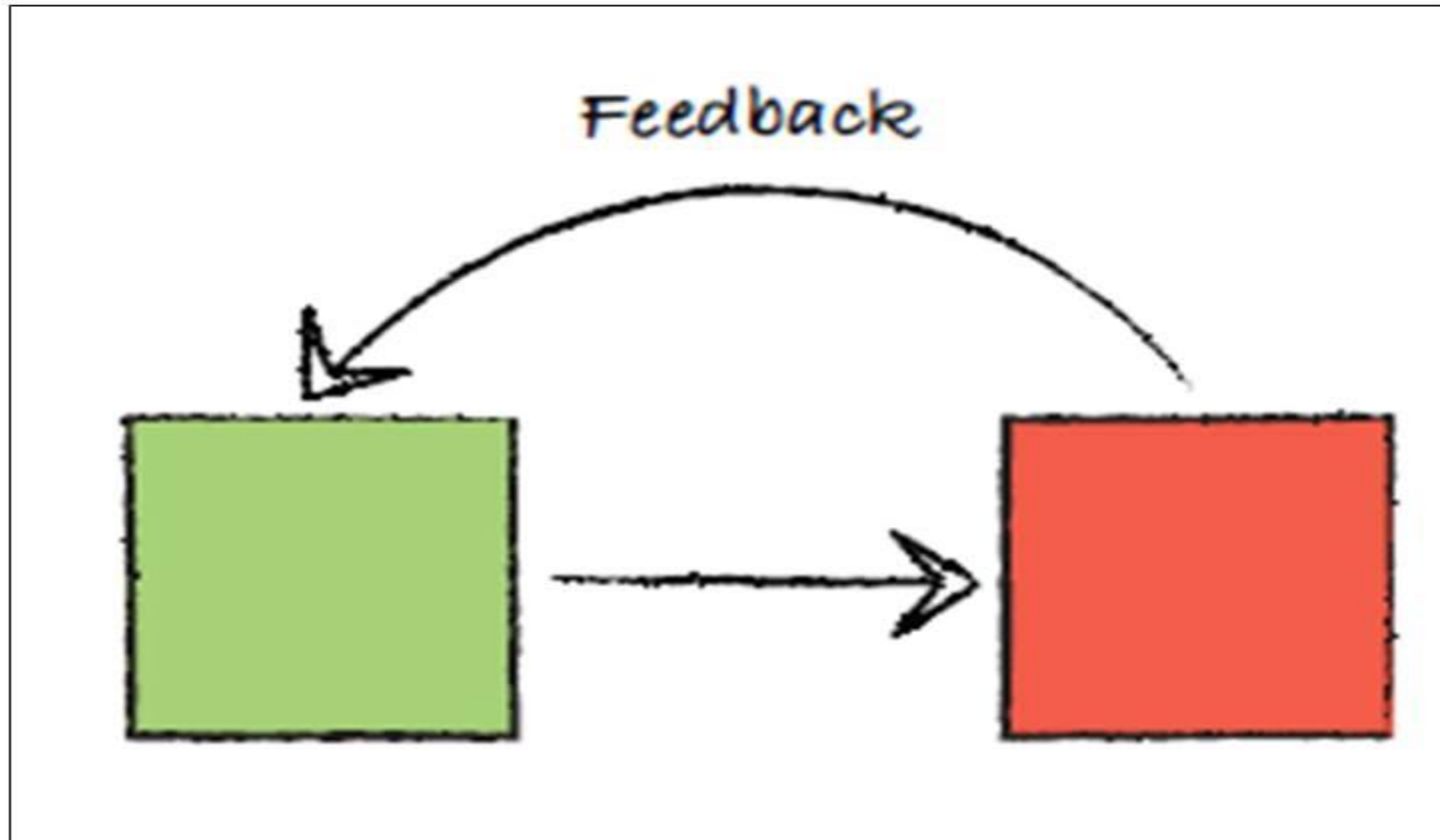
6) La variabilité dans la vie

- **Vous avez un ami et vous voulez l'inviter chez Kazu, un restaurant branché de Montréal, pour 19:00. Le restaurant ne prend pas de réservation. Vous dites donc à votre ami de se présenter à 18:50.**
- **Après cette expérience fantastique, vous décidez d'inviter 5 de vos amis chez Kazu. Comme toujours, vous voulez une place à 19:00.**
- **Allez-vous donner rendez-vous à vos amis à 18:50 ? Non! Vous allez vous donner une marge de manœuvre et convenir de vous rassembler à 18:30. La variabilité a augmenté en invitant 5 amis.**
- **Bien que la distribution de probabilité de l'heure d'arrivée soit indépendante les unes des autres, la variabilité s'est accrue.**

6) Cercle vicieux de la variabilité au travail



6) Boucle de gestion saine

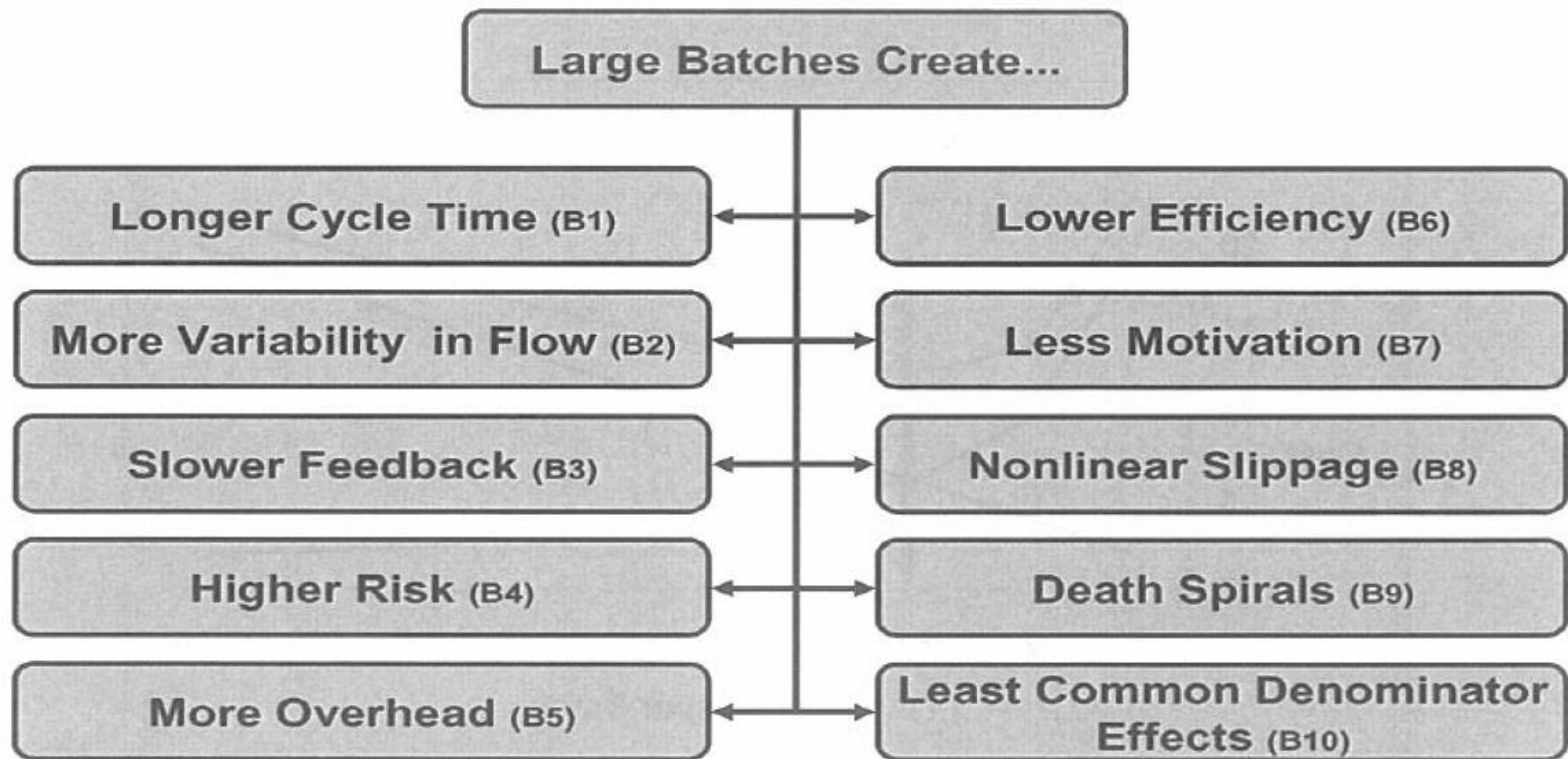


6) La mort de la variabilité – Laissez la dehors!



6) La mort de la variabilité – Des petites bouchées !

Why Reduce Batch Size?



Batch size reduction is the key to reducing queues.

6) Des petits lots facilitent les reset !



7) Métriques visuels KANBAN



7) Métriques visuels et prédictifs Lean KANBAN

Vos indicateurs de gestion ont-ils une valeur prédictive sur vos performances à venir? Sont-ils simples, pertinents, visuels et se génèrent automatiquement?

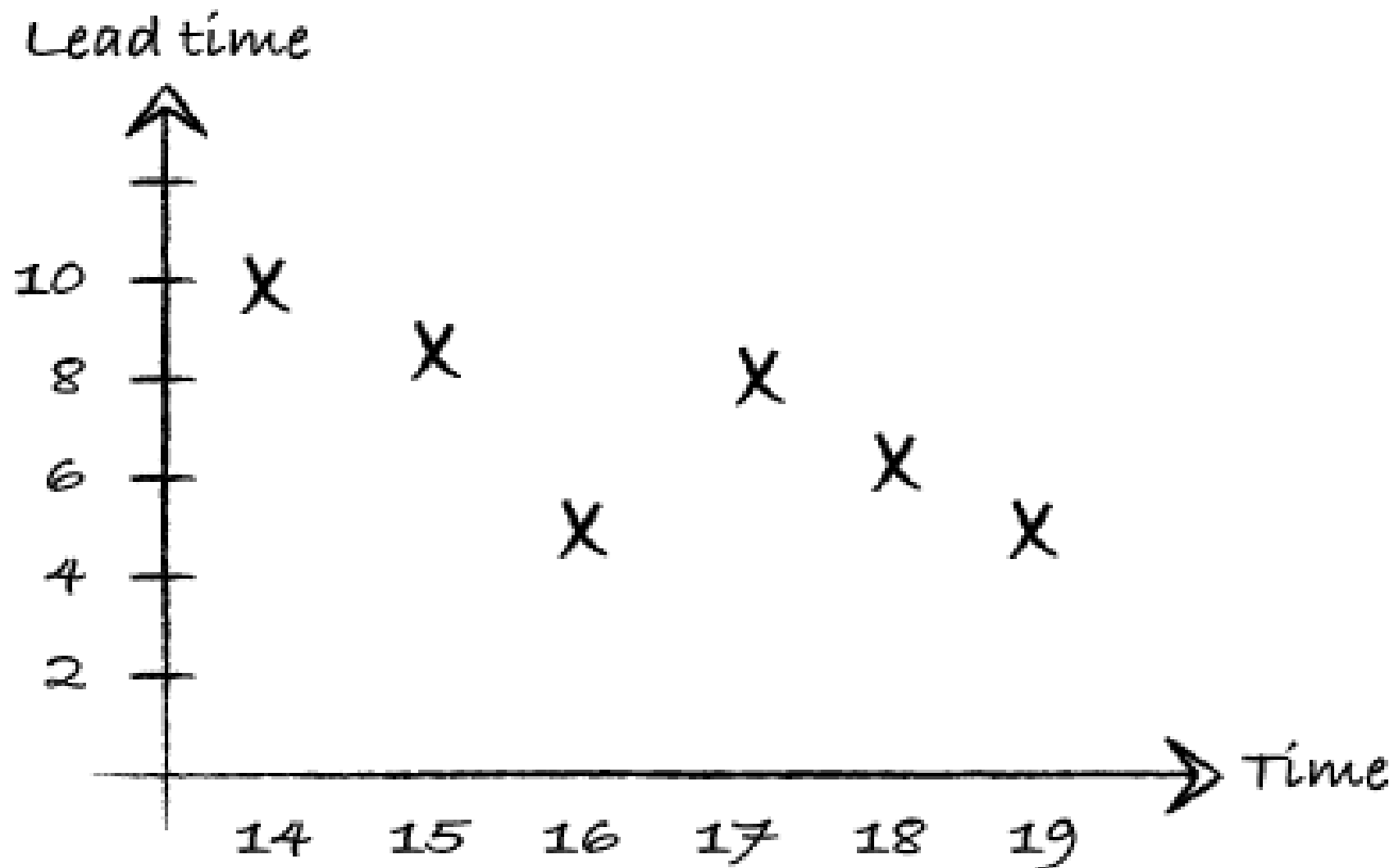
Si une approche basée sur la pensée scientifique des Edwards Deming, Eli Goldratt, Peter Drucker vous intéresse, alors vous serez plus efficace à identifier les systèmes globalement saturés, les systèmes localement saturés et les sources de variabilité de vos processus. Et vous aurez des solutions en main!

7) La mort de la variabilité – Autres Trucs

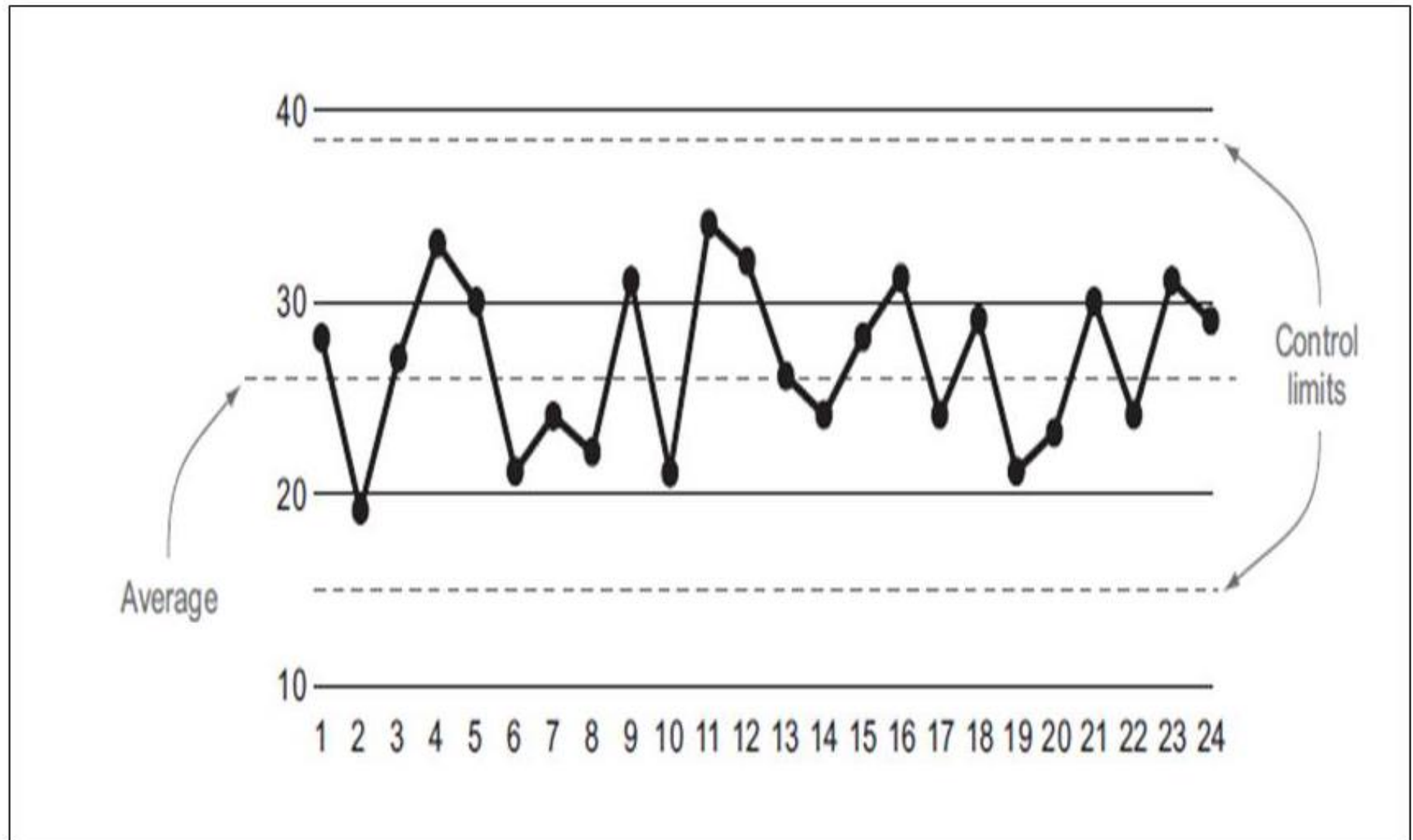
Metrics for Flow-based Product Development

- **Queues**
 - Design-in-Process Inventory
 - Queue Size
 - Trends in Queue Size
 - Cost of Queues
 - Aging of Items in Queue
- **Batch Size**
 - Batch Size
 - Trends in Batch Size
 - Transaction Cost per Batch
 - Trends in Transaction Cost
- **Cadence**
 - Processes Using Cadence
 - Trends in Cadence
- **Capacity Utilization**
 - Capacity Utilization Rate
- **Feedback**
 - Feedback Speed
 - Decision Cycle Time
 - Aging of Problems
- **Flexibility**
 - Breadth of Skill Sets
 - Number of Multipurpose Resources
 - Number of Processes with Alternate Routes
- **Flow**
 - Efficiency of Flow
 - DIP Turns

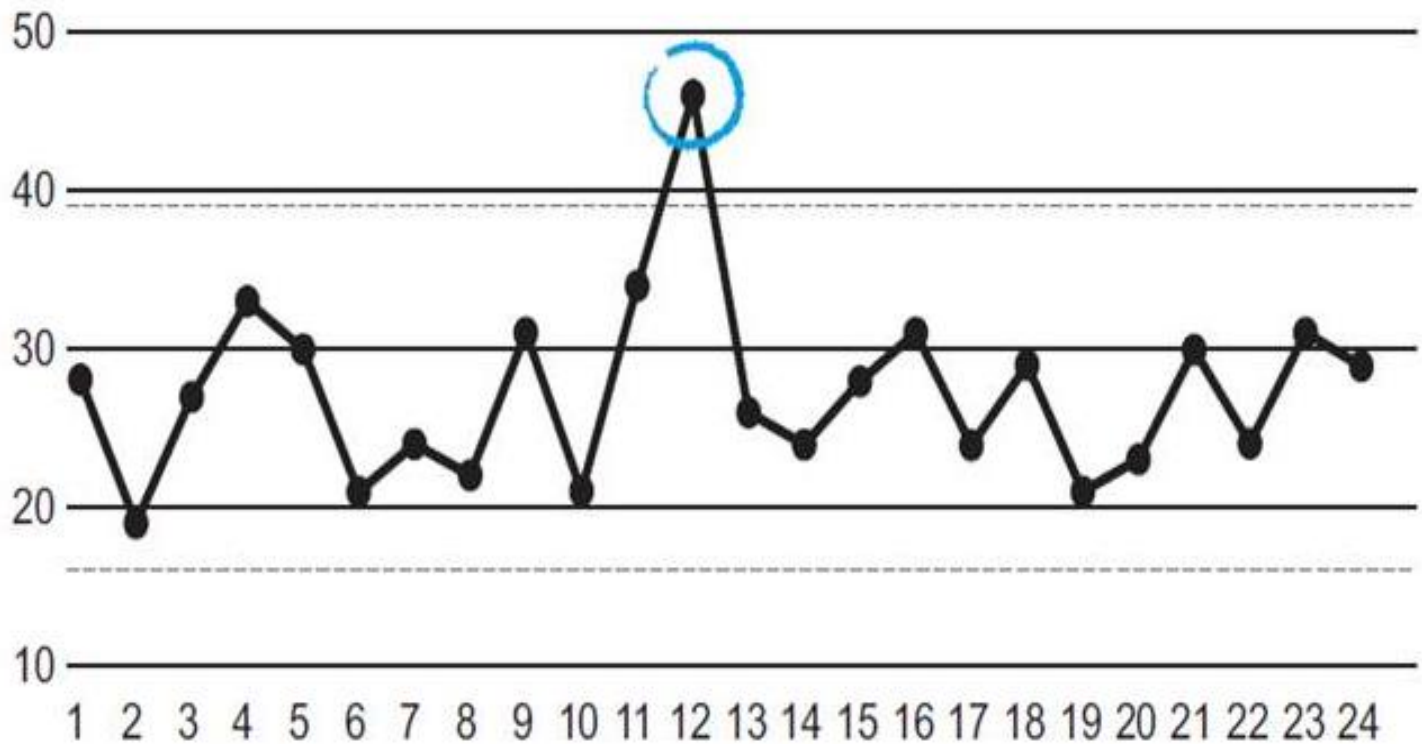
Tendance du délai de livraison



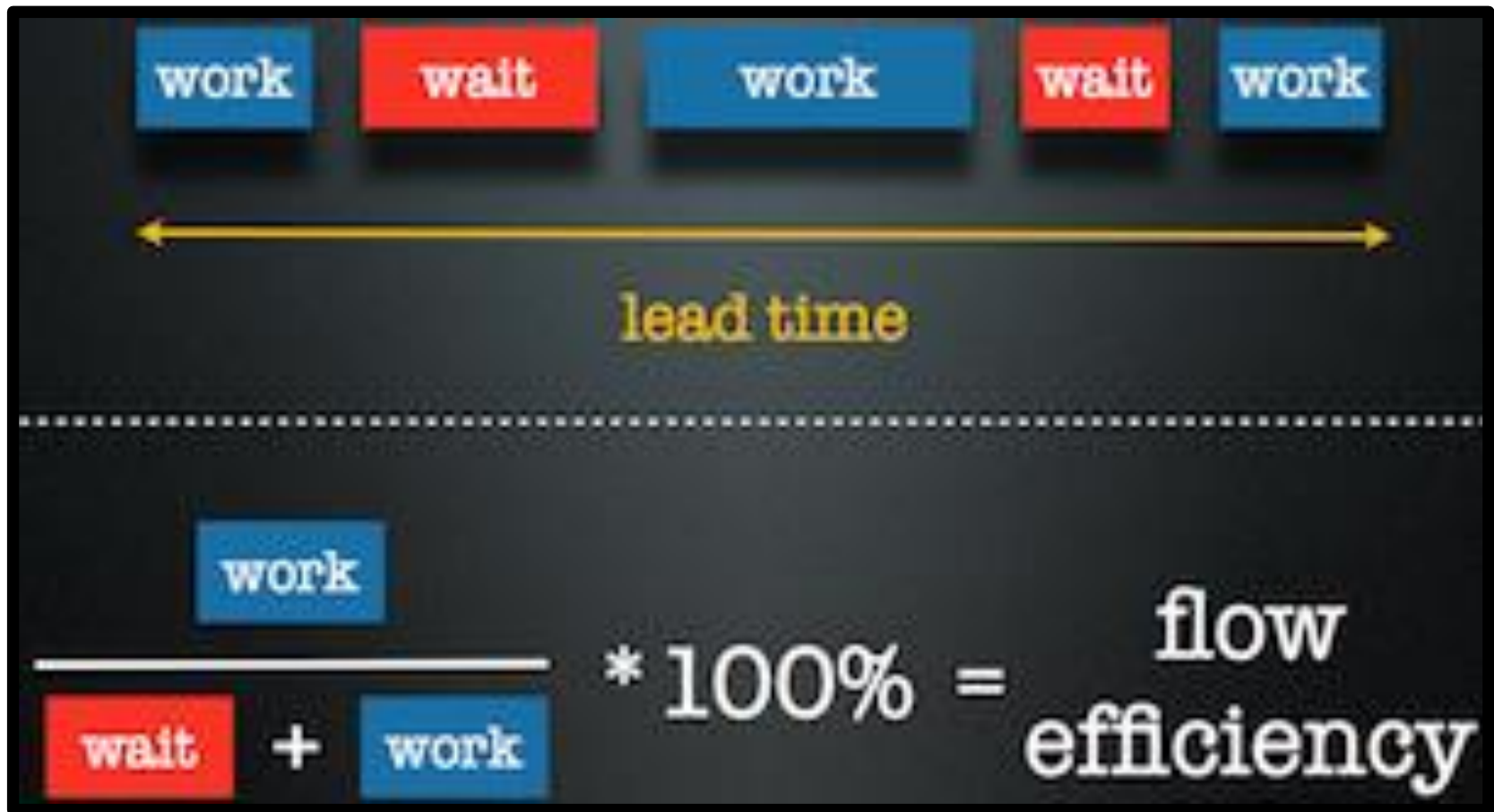
Variation – Délai de livraison moyen



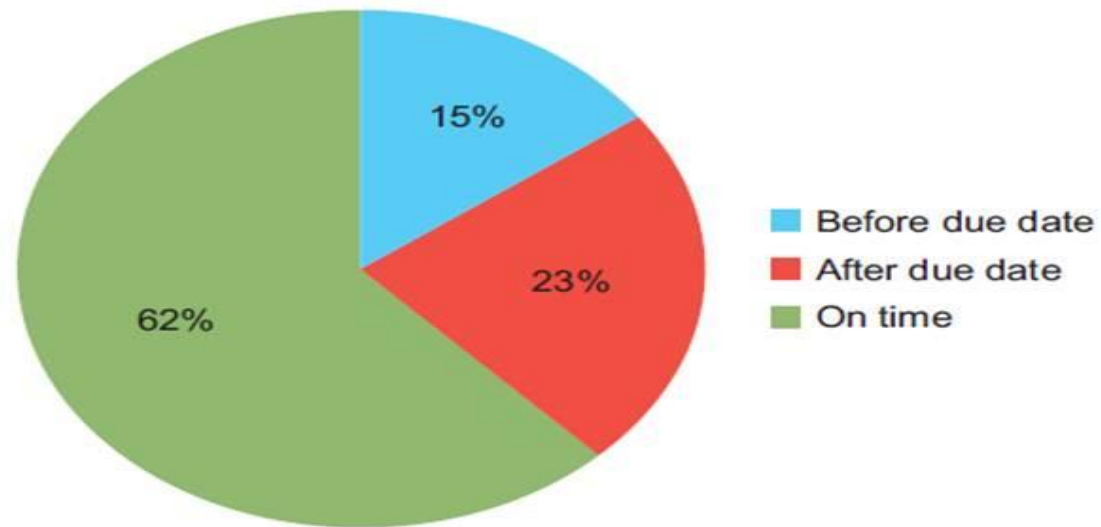
Variation notable du délai de livraison



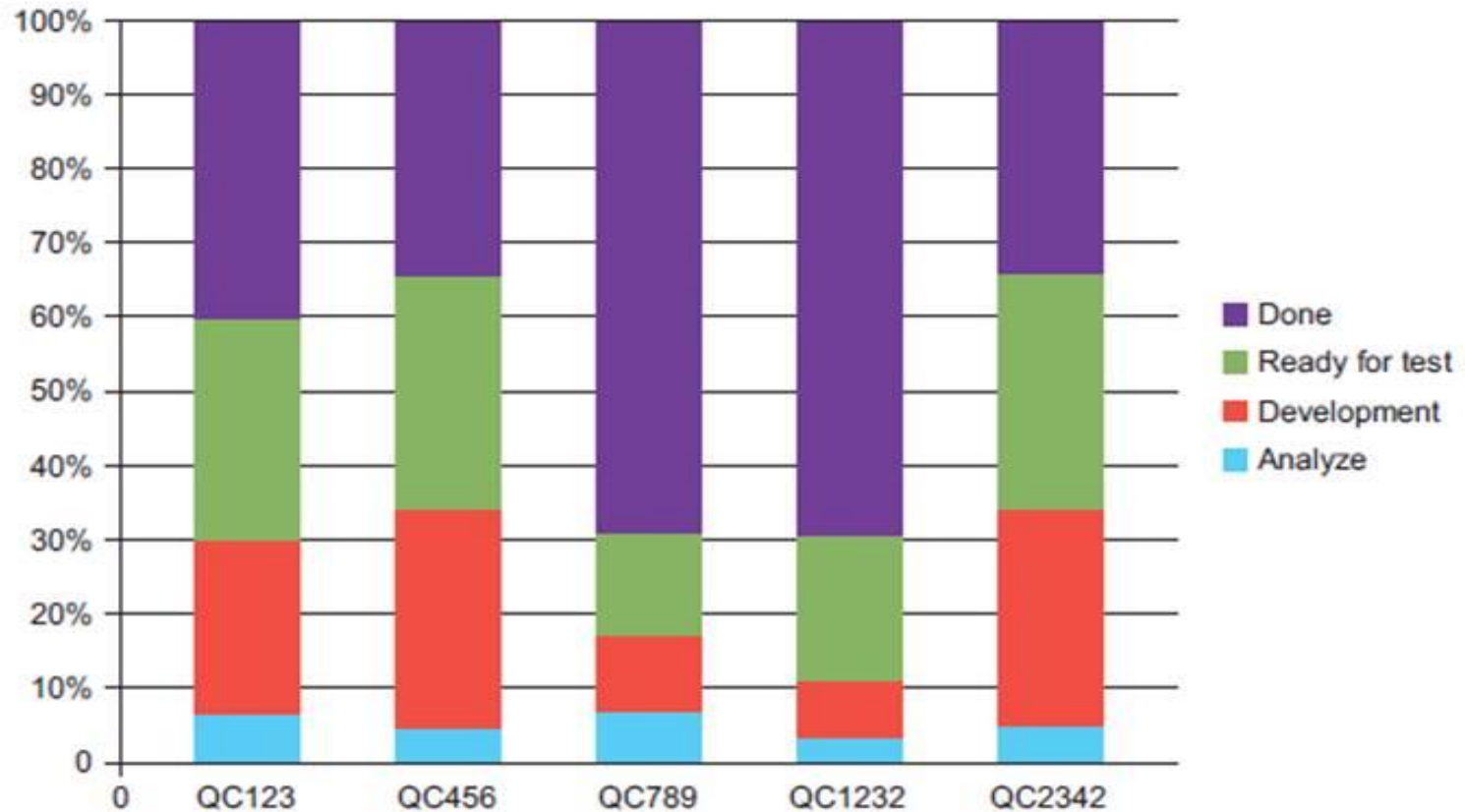
Flow Efficiency



Performance de livraison

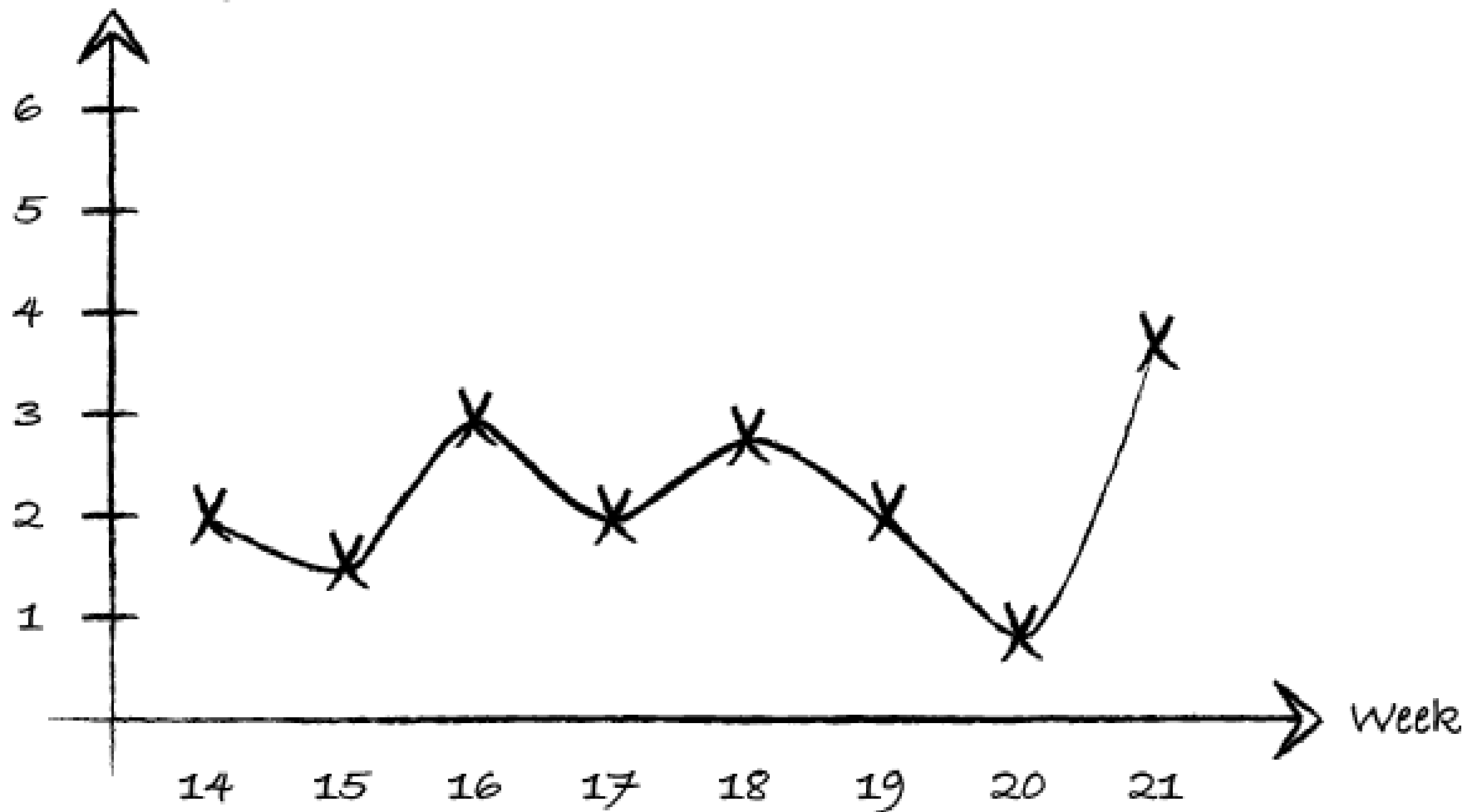


Histogramme – Distribution du temps investi



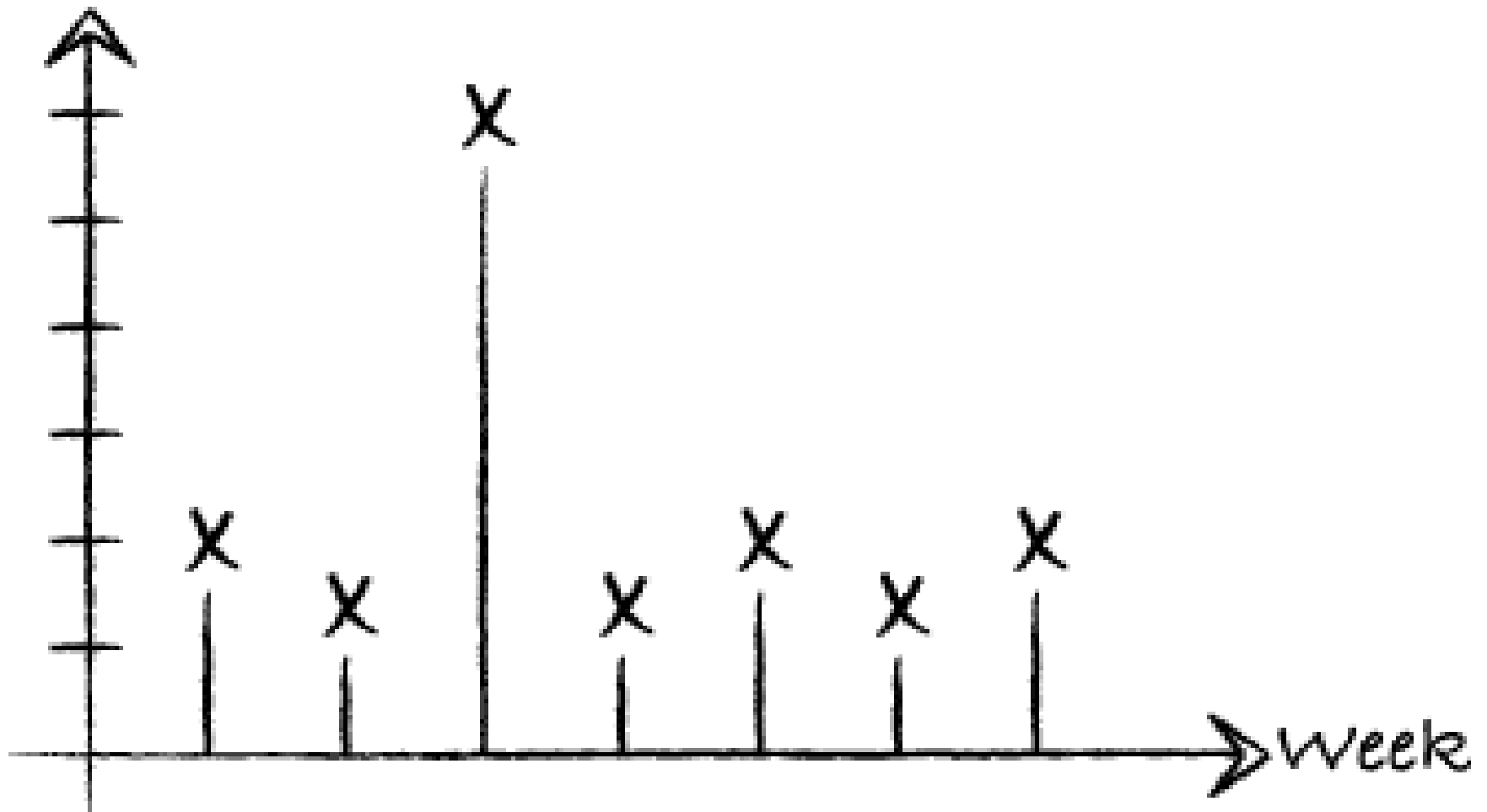
Débit (Vélocité SCRUM)– Throughput

items deployed



Bugs

bugs



8) Tableau Kanban



"I'm not leaving you. I'm pivoting to another man."

8) Création d'un tableau Kanban

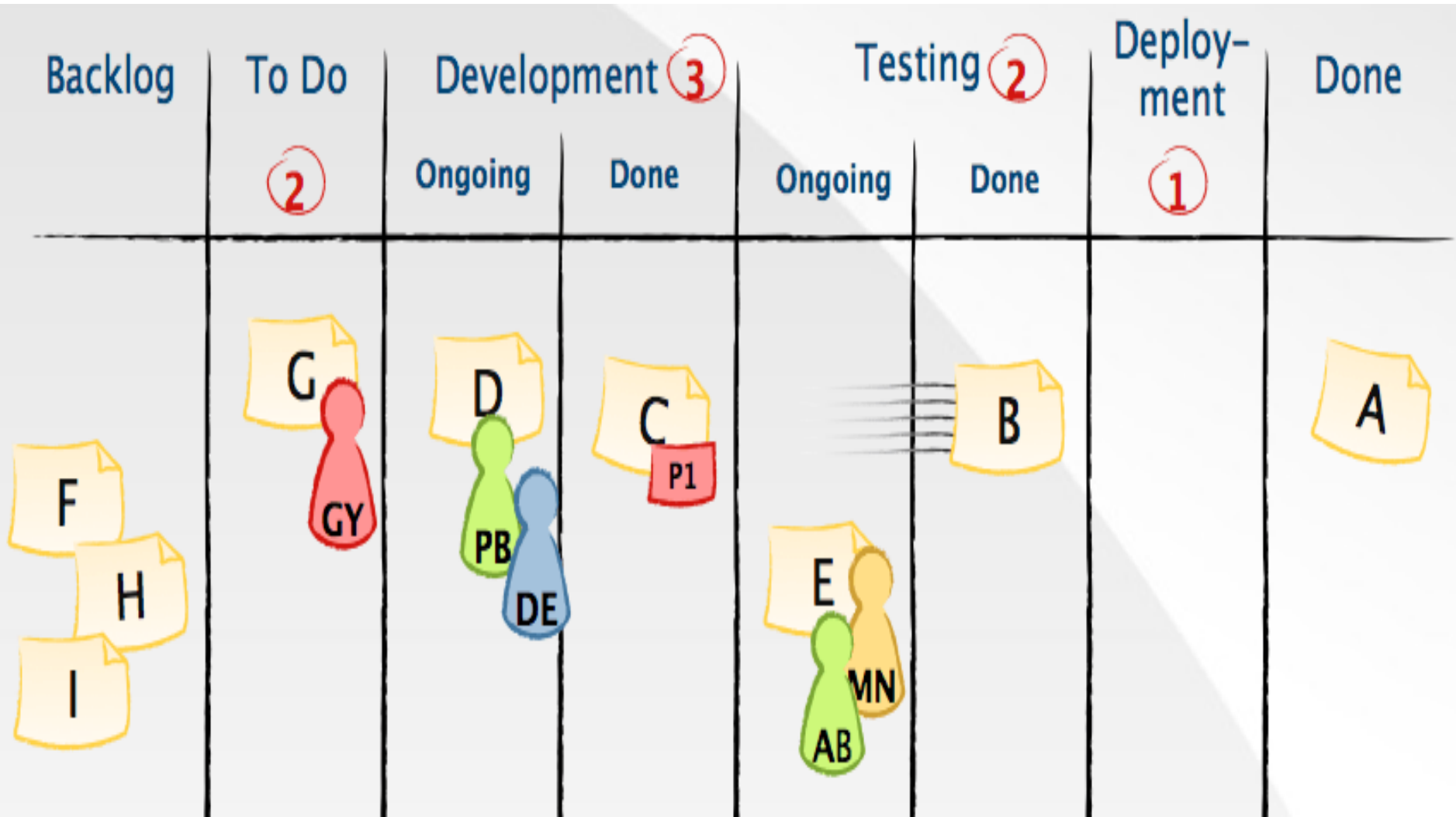
Repeat for Every Service

Backlog	Input Queue <i>(?)</i>	Activity 1 <i>(?)</i>	Activity 2 <i>(?)</i>	Activity 3 <i>(?)</i>	Output Buffer <i>(∞)</i>	Done
		<i>Service 1</i>				

All Other Services

8) Daily Kanban Standups

De droite à gauche ! De haut en bas !



8) Daily Standup



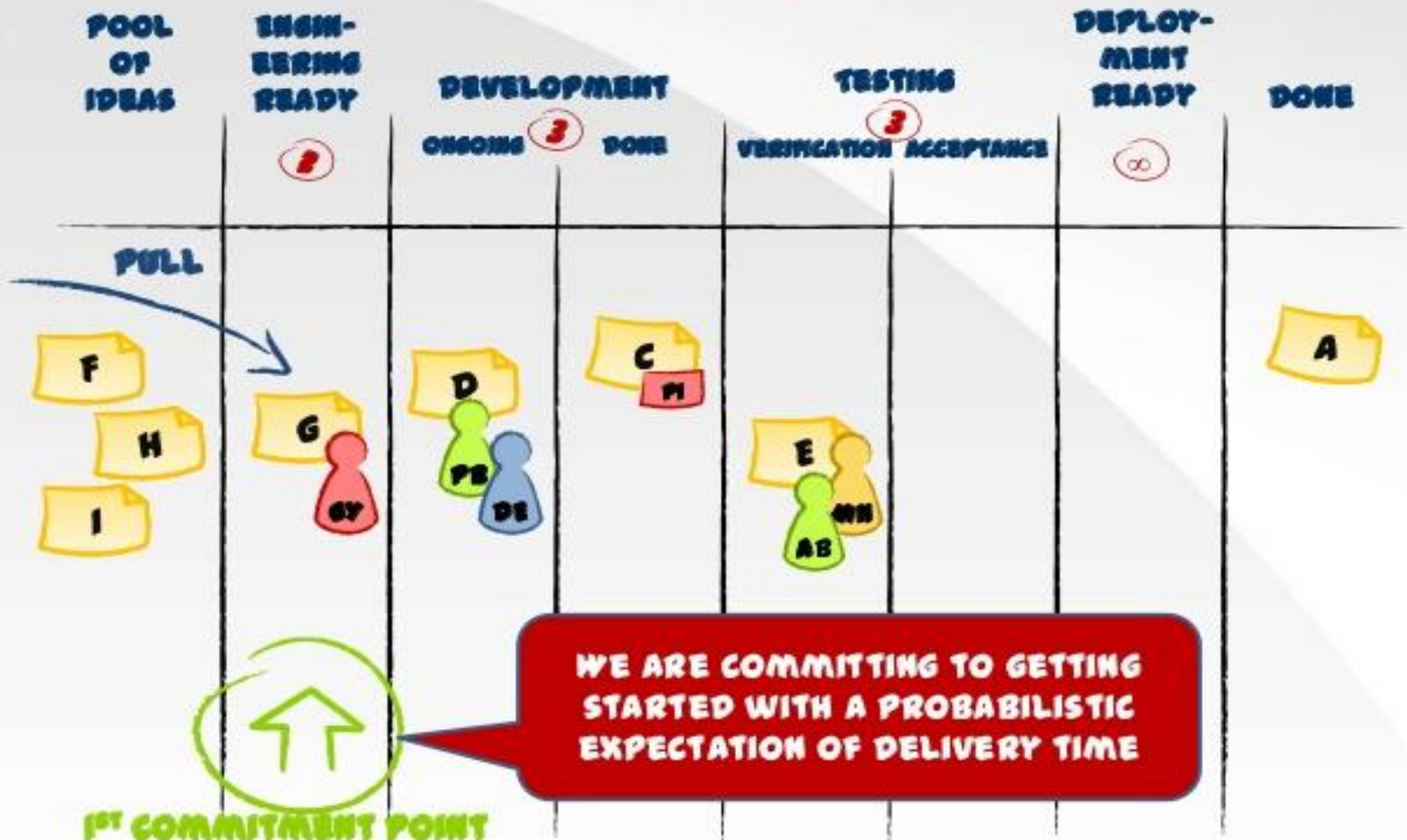
8) Commitment

Commitment is deferred



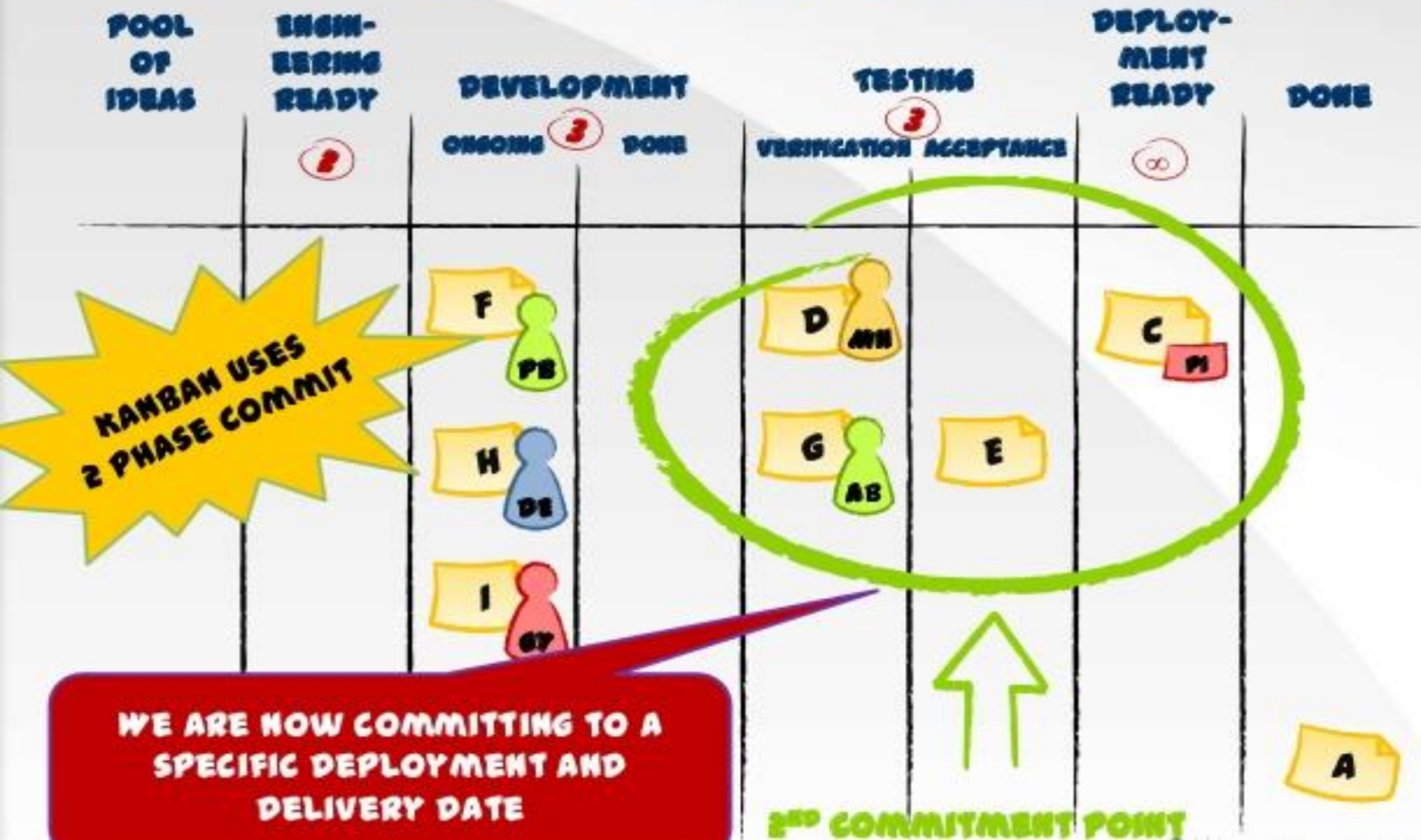
8) Commitment

Commitment in Kanban



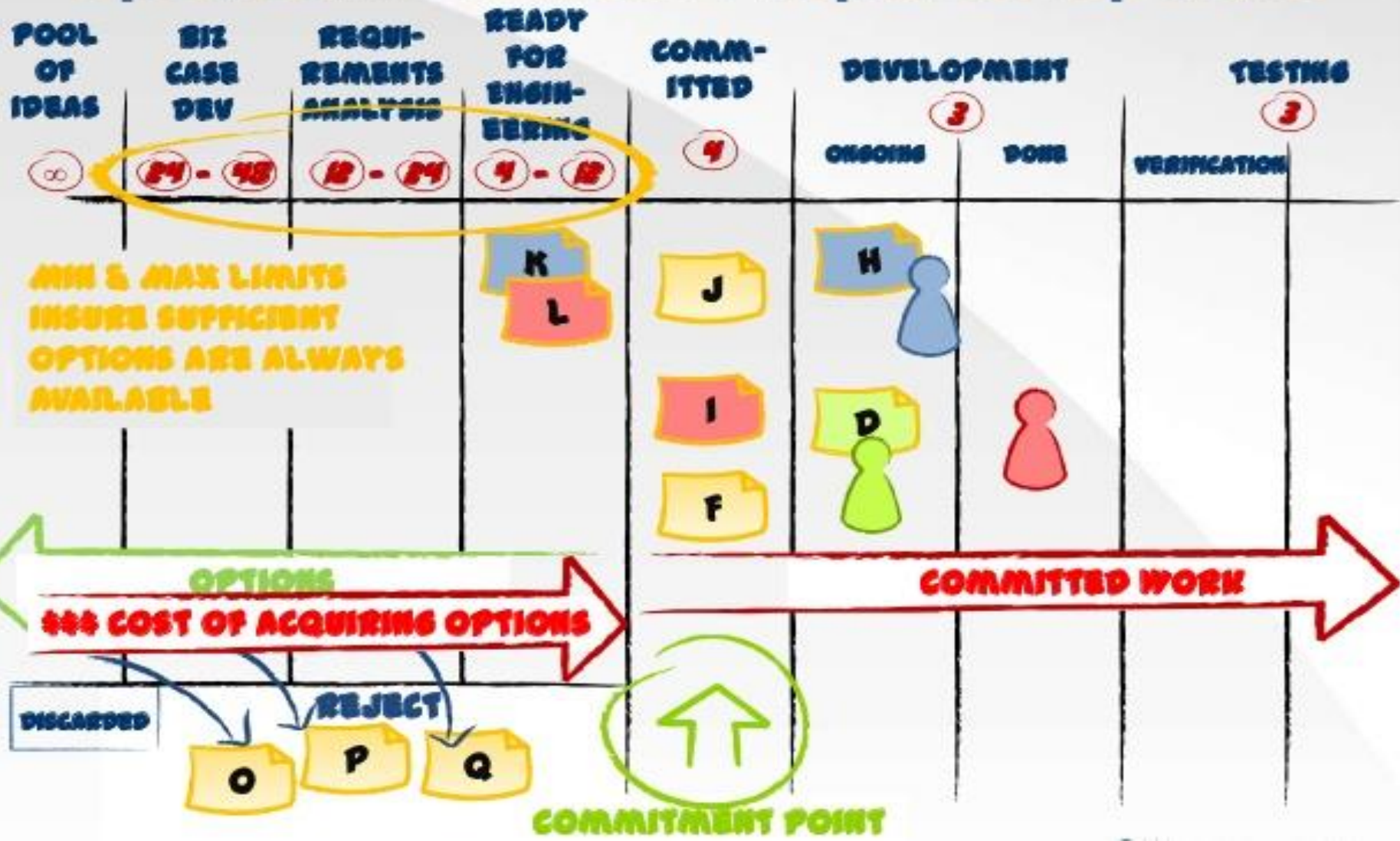
8) Commitment

2nd Phase Delivery Commitment



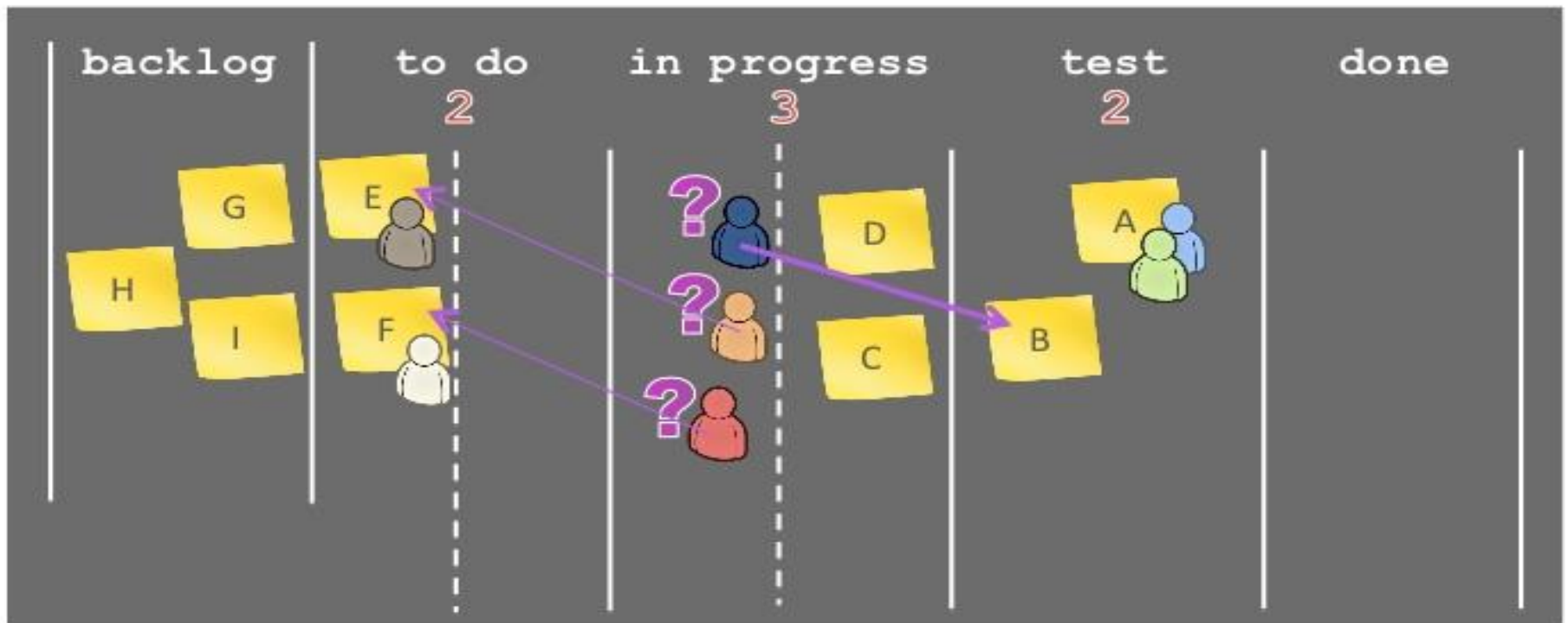
8) Upstream Kanban

Upstream Kanban Prepares Options



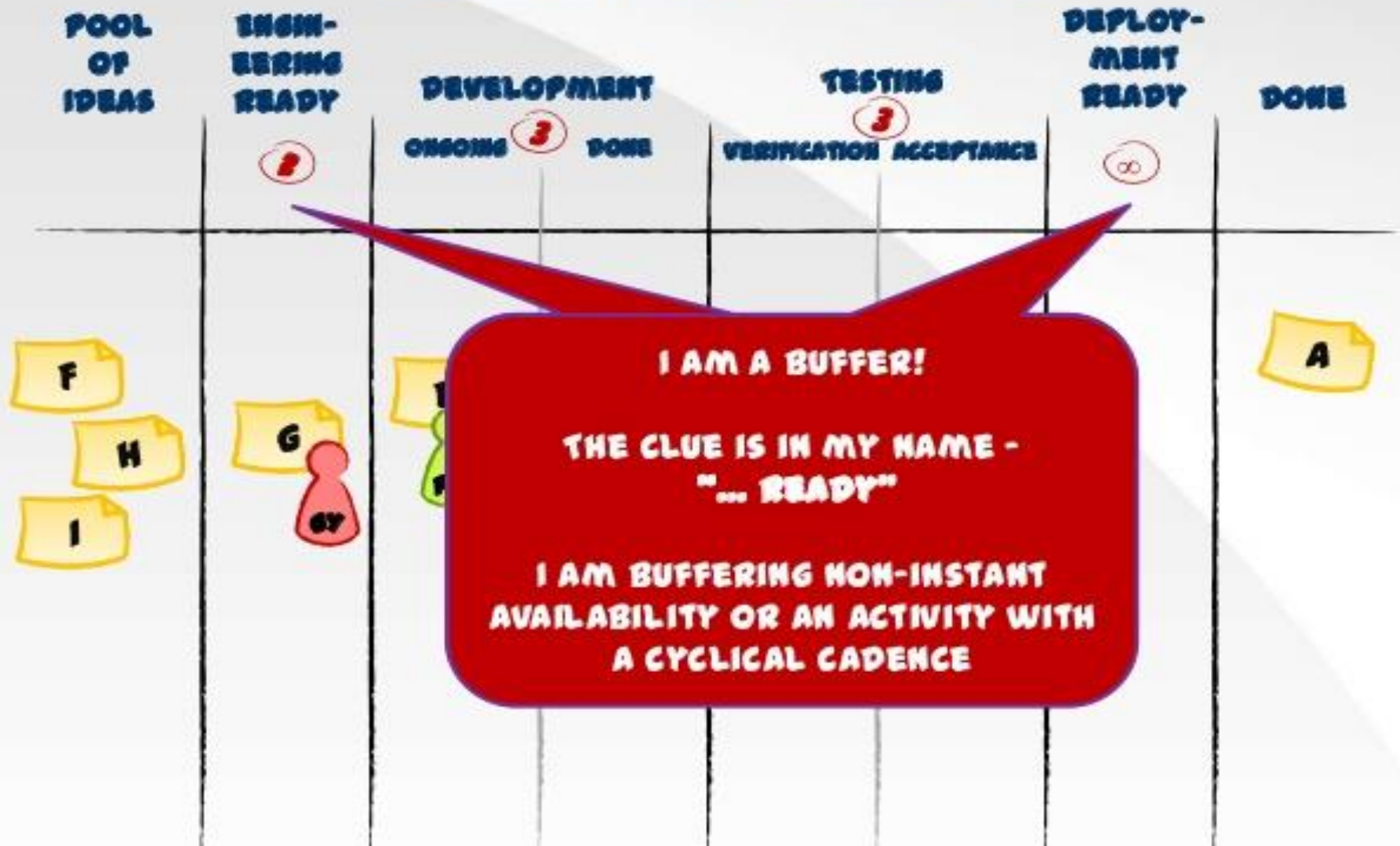
8) Problème de Flux !

stuck (nothing to pull)



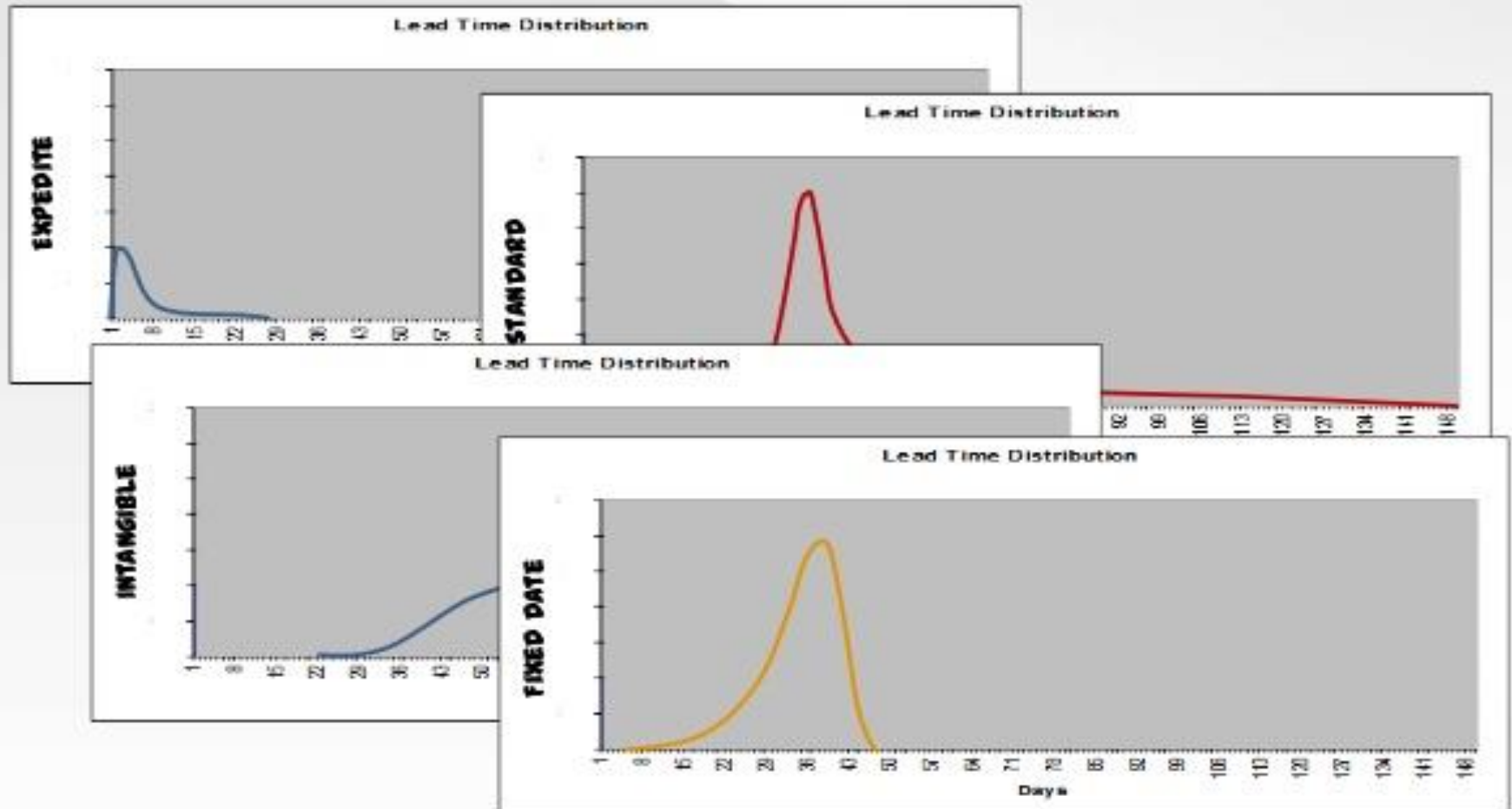
8) File d'attente et Buffer

Identifying Buffers



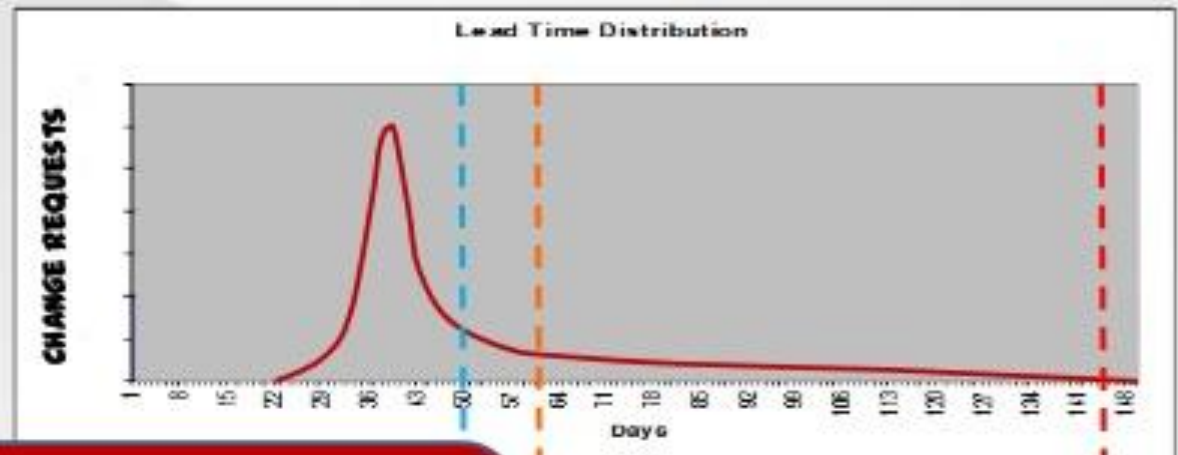
8) Classes de service

EXAMPLE DISTRIBUTIONS



8) Probabilistic Forecasting

The psychology of a probabilistic approach can be challenging...



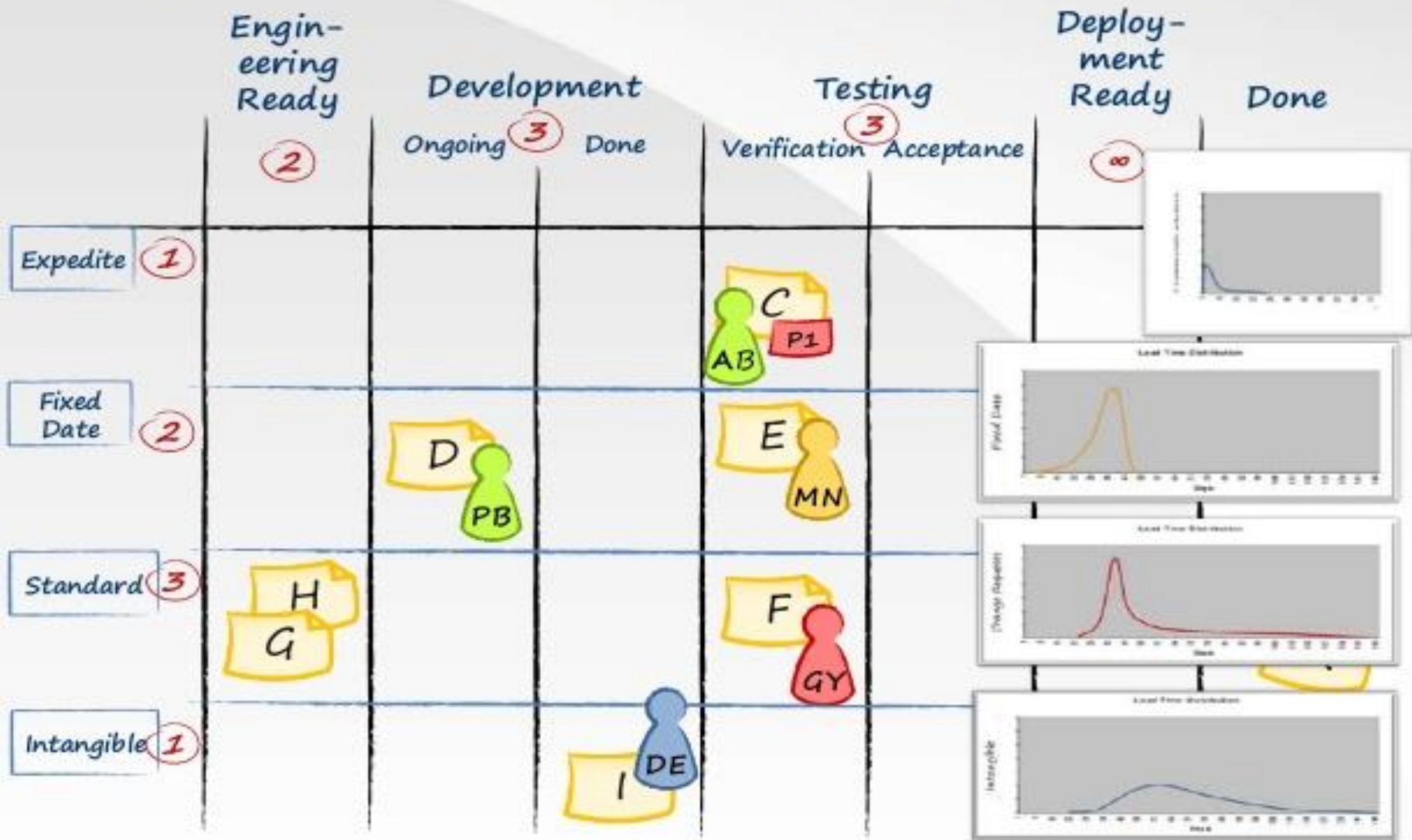
I DON'T WANT TO TAKE THE RISK OF BEING LONGER THAN 60 DAYS. I NEED A PRECISE ESTIMATE OF WHEN IT WILL BE DELIVERED!

98% at
150 days

85% at
60 days

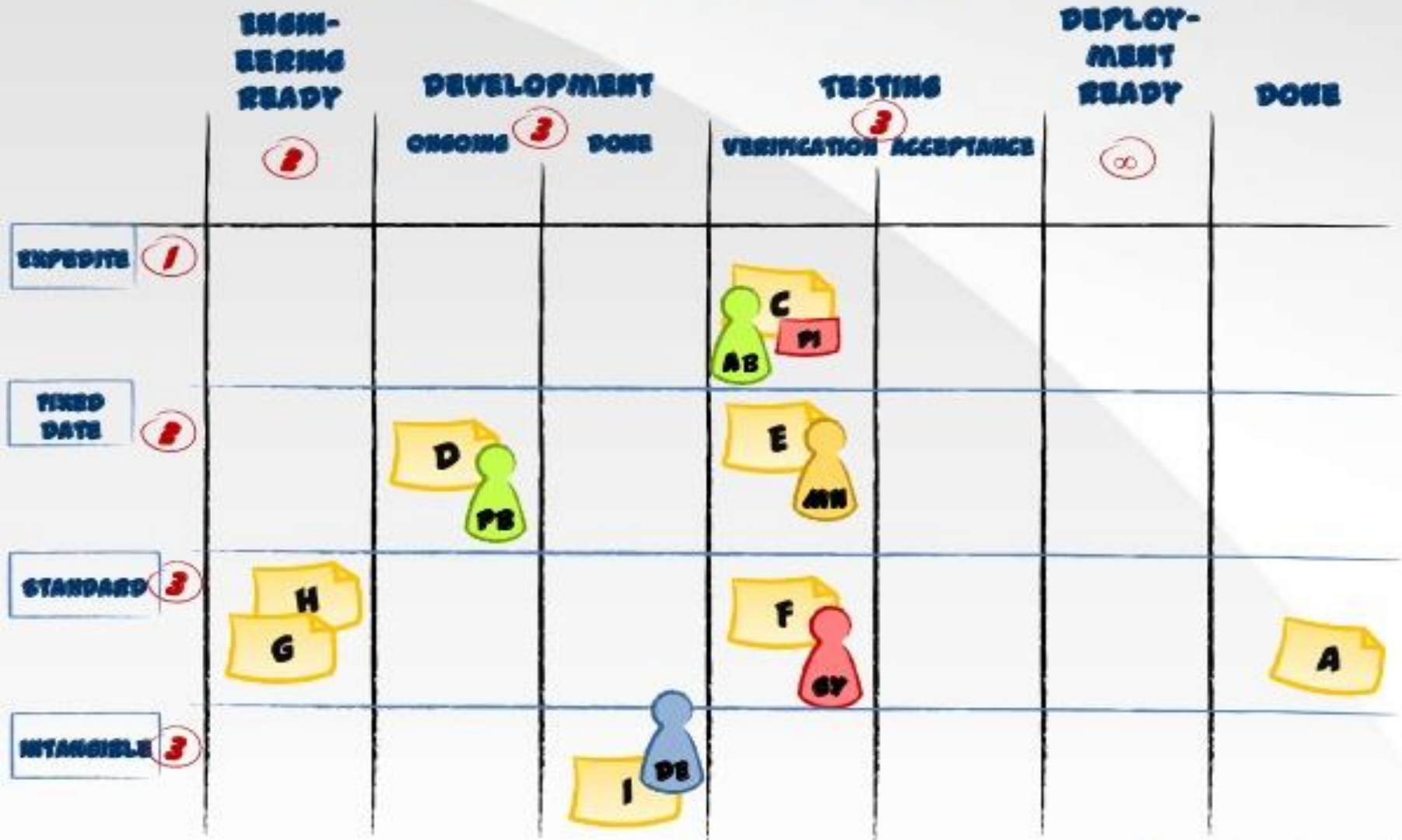
8) Classes de service et confiance

Classes of Service Help Improve Trust



8) Classes de service et risque

Visualize Risks on the Board

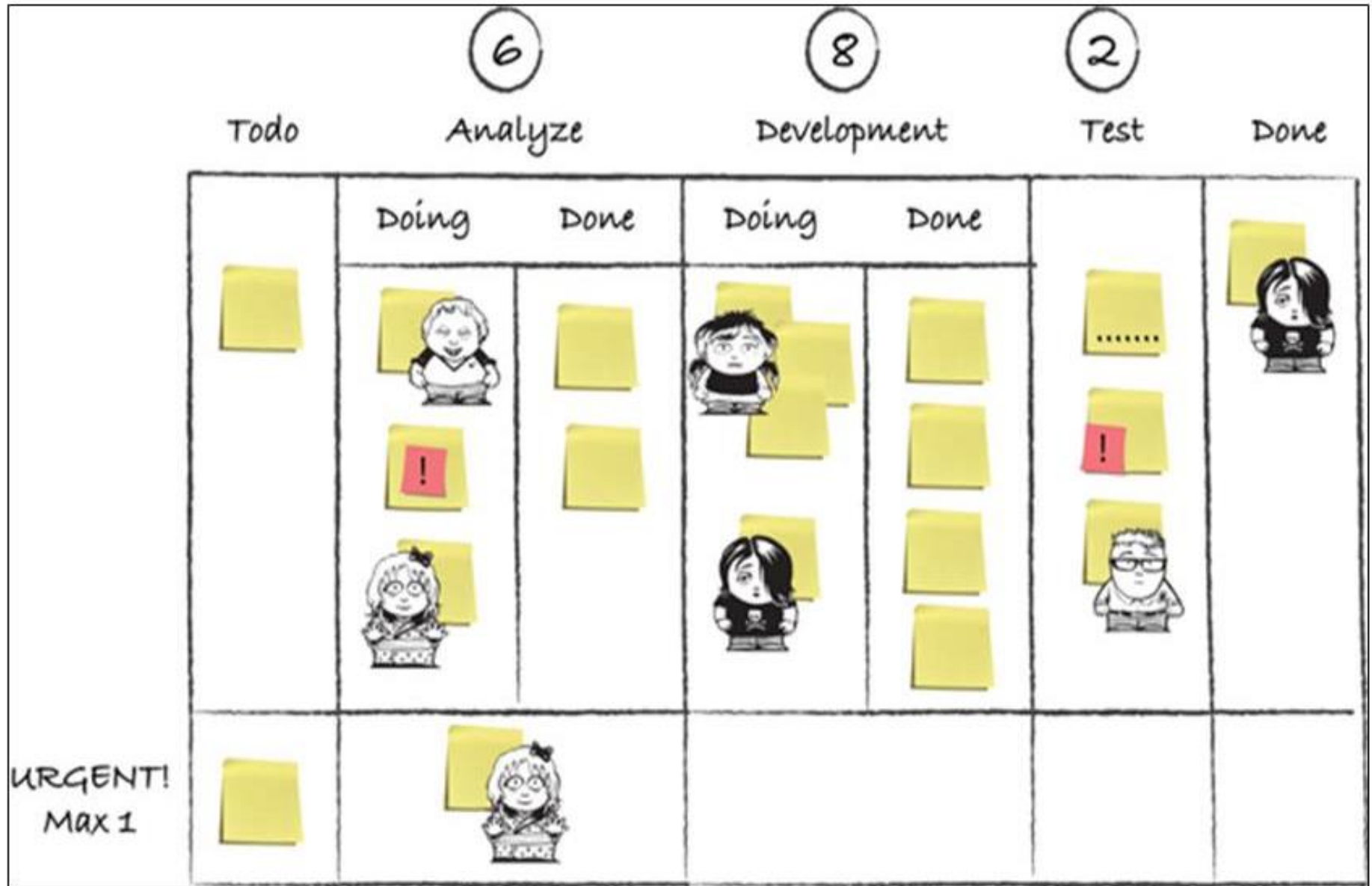


8) Classes de service et capacité

Hedge Delivery Risk by allocating capacity in the kanban system



8) Analyse d'un tableau Kanban



8) Moment Zen – Amélioration continue

SLACK!



Great, actually!
We've gotten the new WIP limit
of 6 items to work for us. Work
Flows smoothly, and it's
nice and easy.

How is
everything working
right now?



Great!
Why not try a WIP
limit of 5 then?



What? Why should
we do that? We'll have to change
stuff and try harder to
get this to work.



... [Zen-like silence]



Aahh ... I see.
That's how we improve.



8) Gantt vs Tableau Kanban

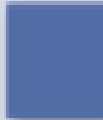
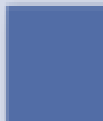
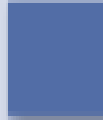
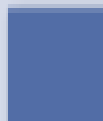
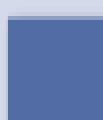
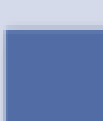
Selon Dan North : Les poupons ont peur de 2 choses:

- 1) La lumière
- 2) Les Gantt charts

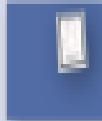
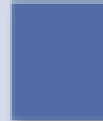
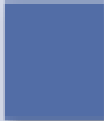
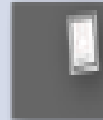
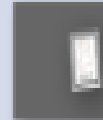
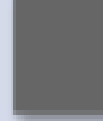


8) Example de tableau Kanban

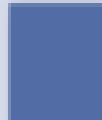
TO DO

Recruitment	  
Induction	 
Personnel Admin	
Training & Dev	
Perf & Reward Management	
Life Events	

DOING

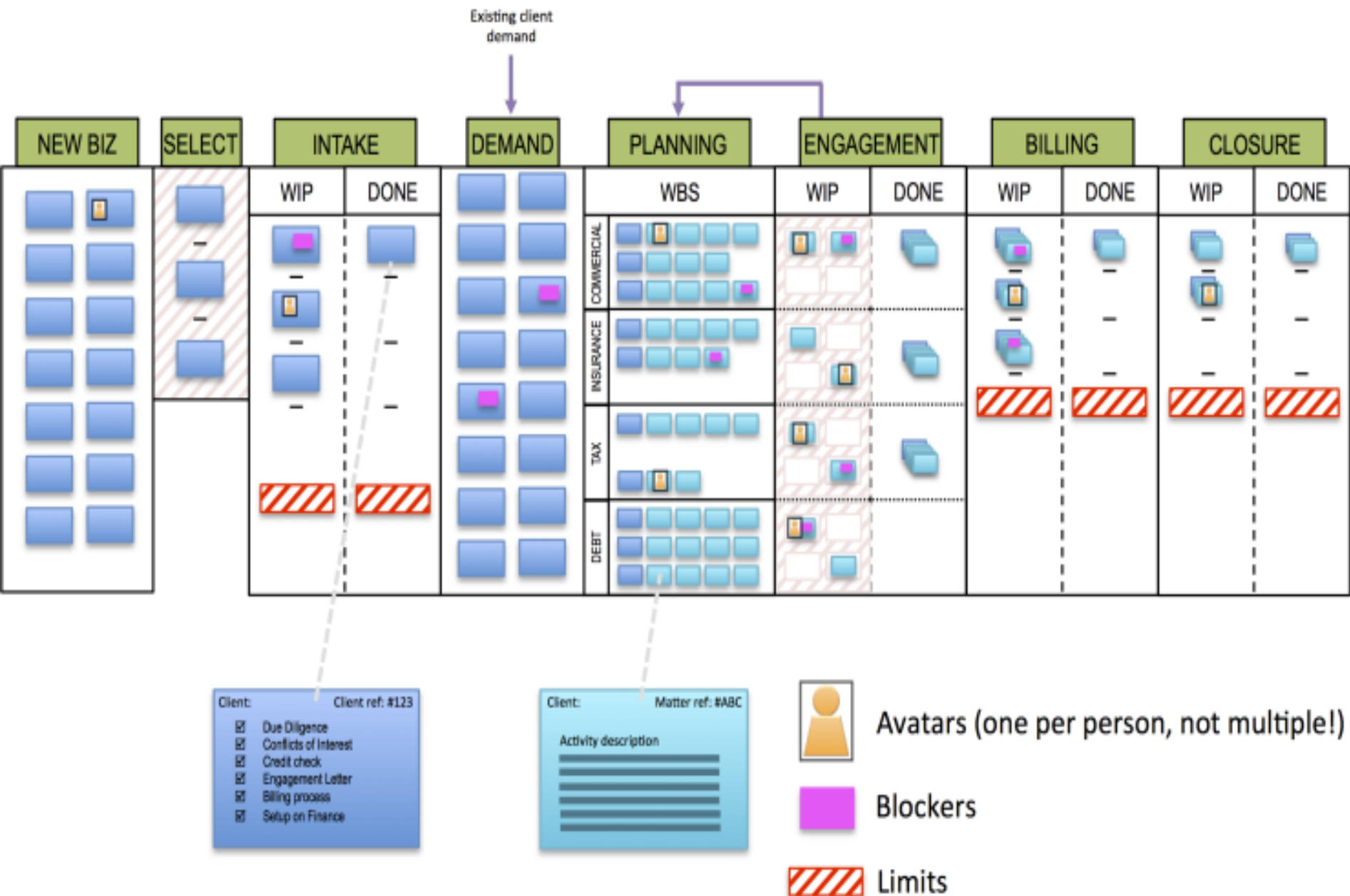
NEXT	     4			
	IT 3    	Facilities 3   	Legal 2  	Finance 3   

DONE

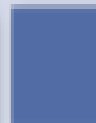
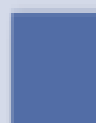
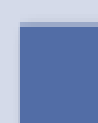
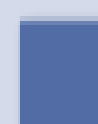
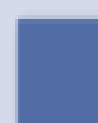
 


8) Example de tableau Kanban

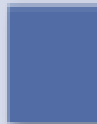
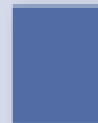
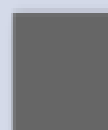
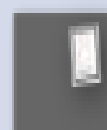
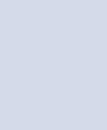
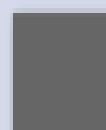
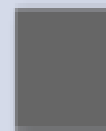
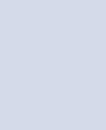


8) Example de tableau Kanban

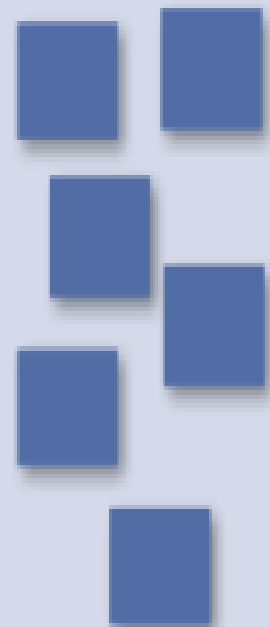
TO DO

Recruitment	  
Induction	 
Personnel Admin	
Training & Dev	
Perf & Reward Management	
Life Events	

DOING

NEXT	     4			
	IT 3	Facilities 3	Legal 2	Finance 3
	   	   	  	   

DONE

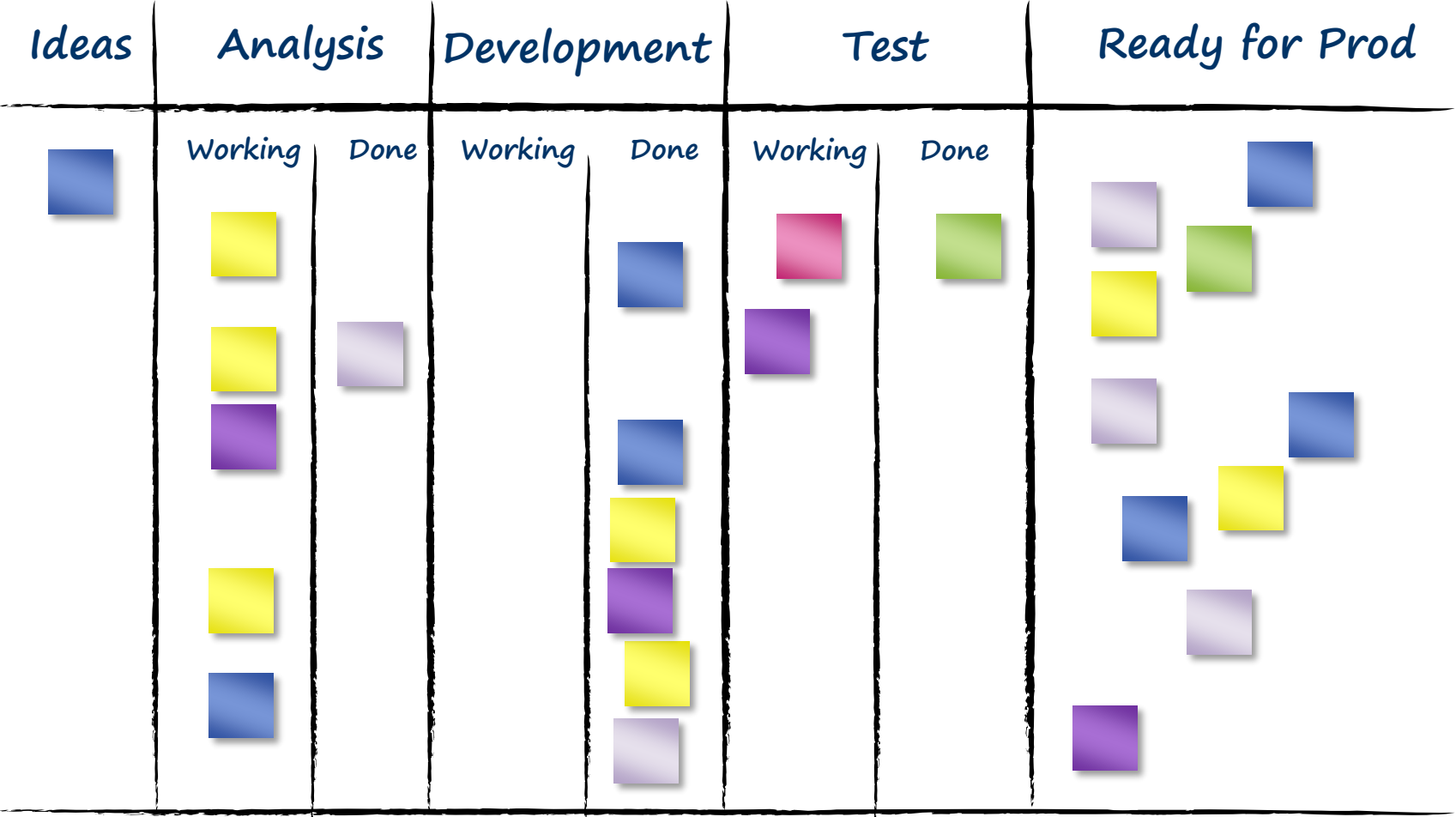


8) Example de tableau Kanban



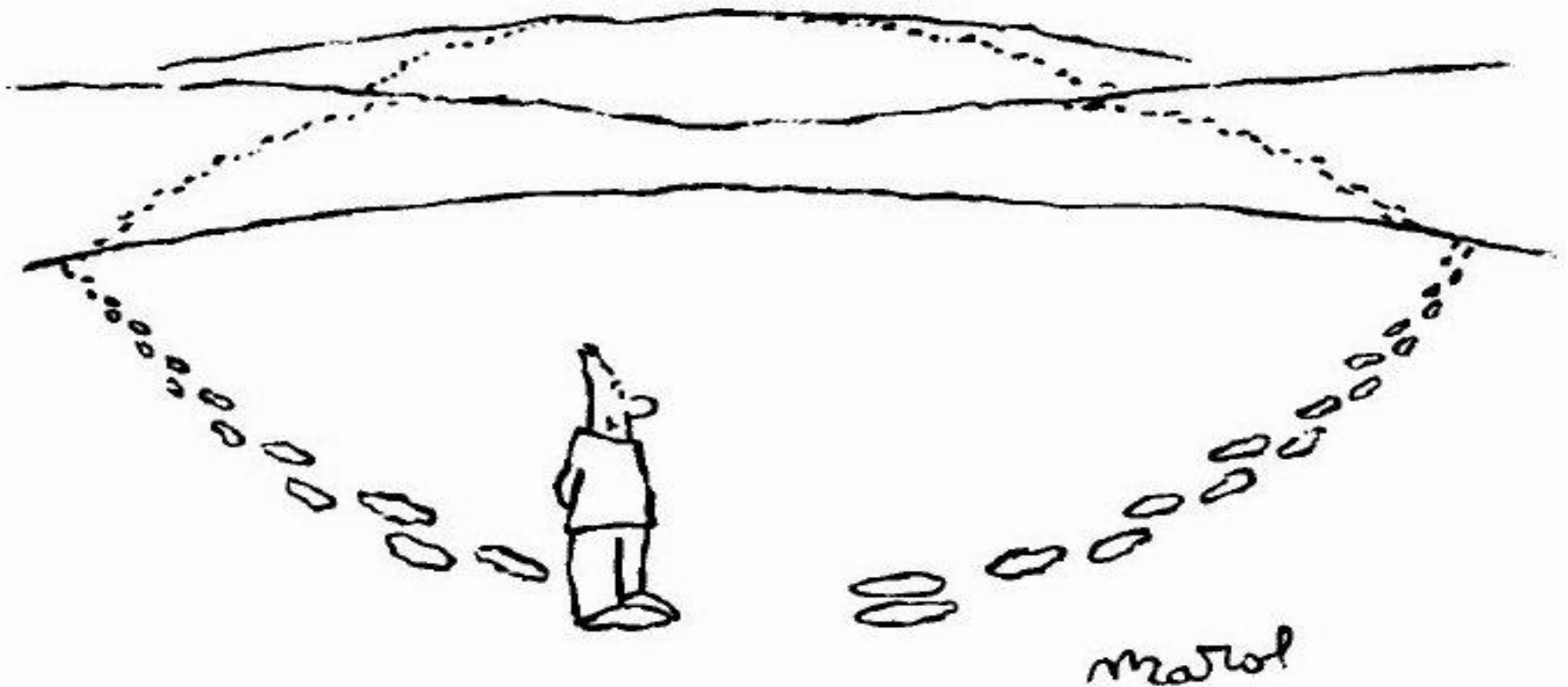
Reading a Kanban Board – From Right to Left

STOP STARTING, START FINISHING !!!



Période de questions

DIRE QU'IL Y A QUELQUES ANNÉES
JE N'EN ÉTAIS QUE LÀ...!

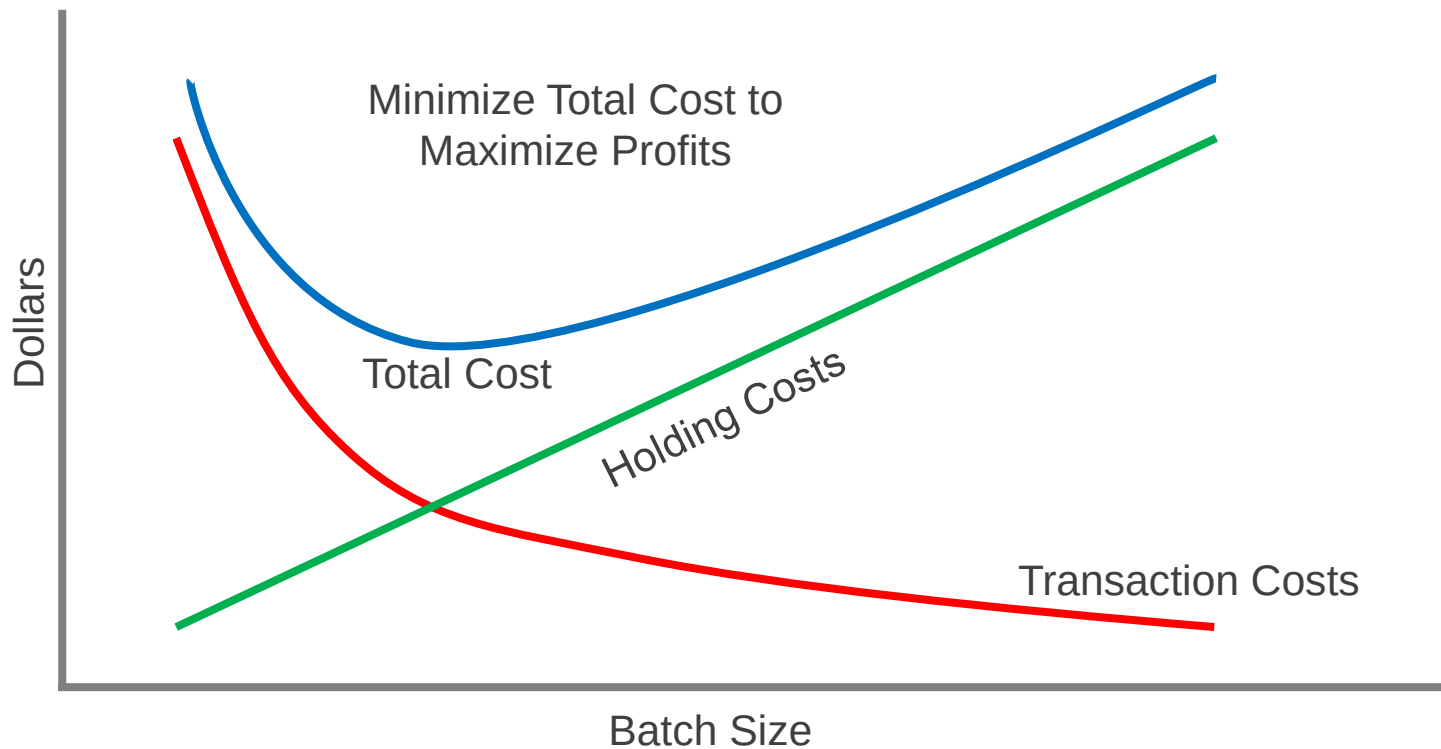


10) Déjà vu – 1913



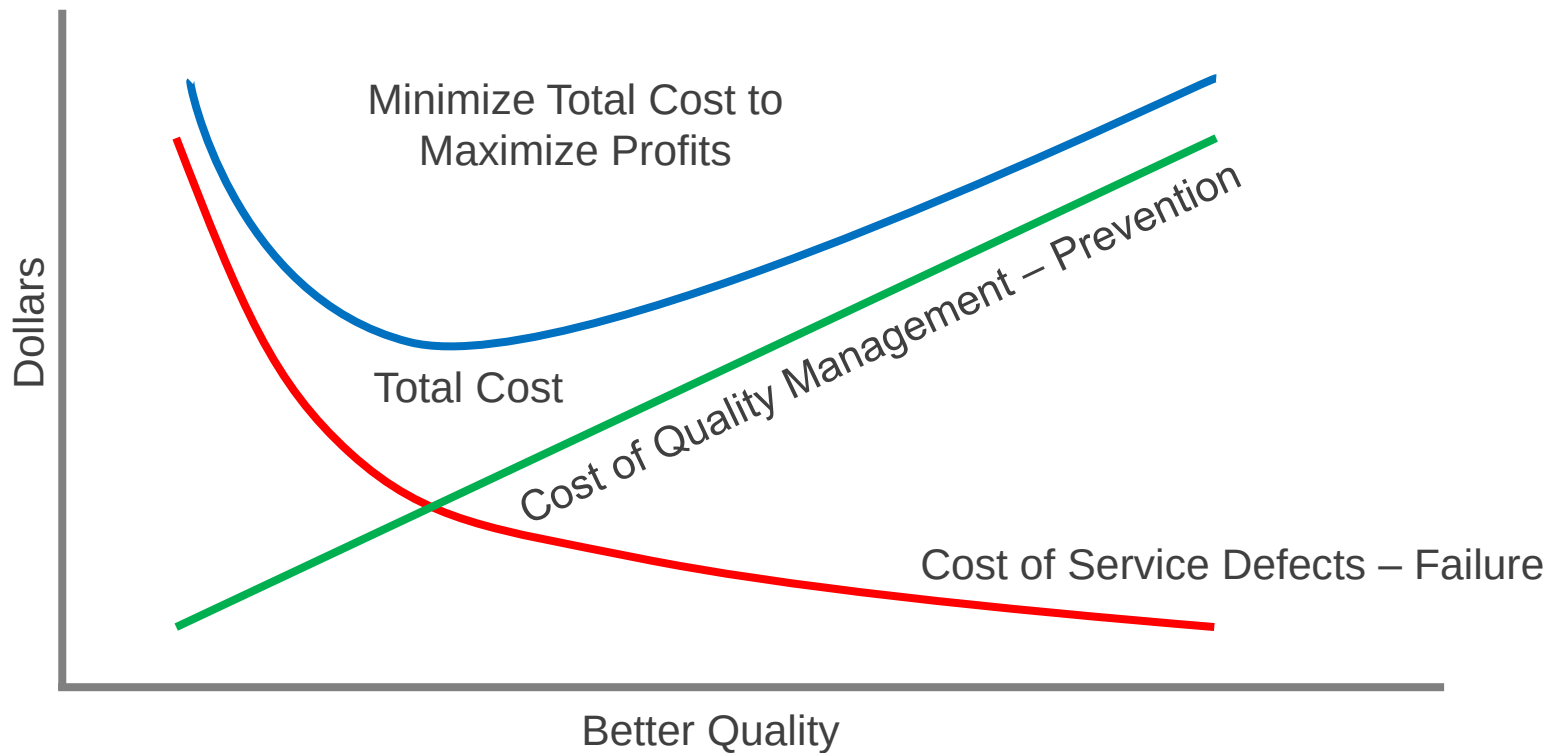
10) 1913 - Quantité Économique à Commander

Managing Inventory On Hand



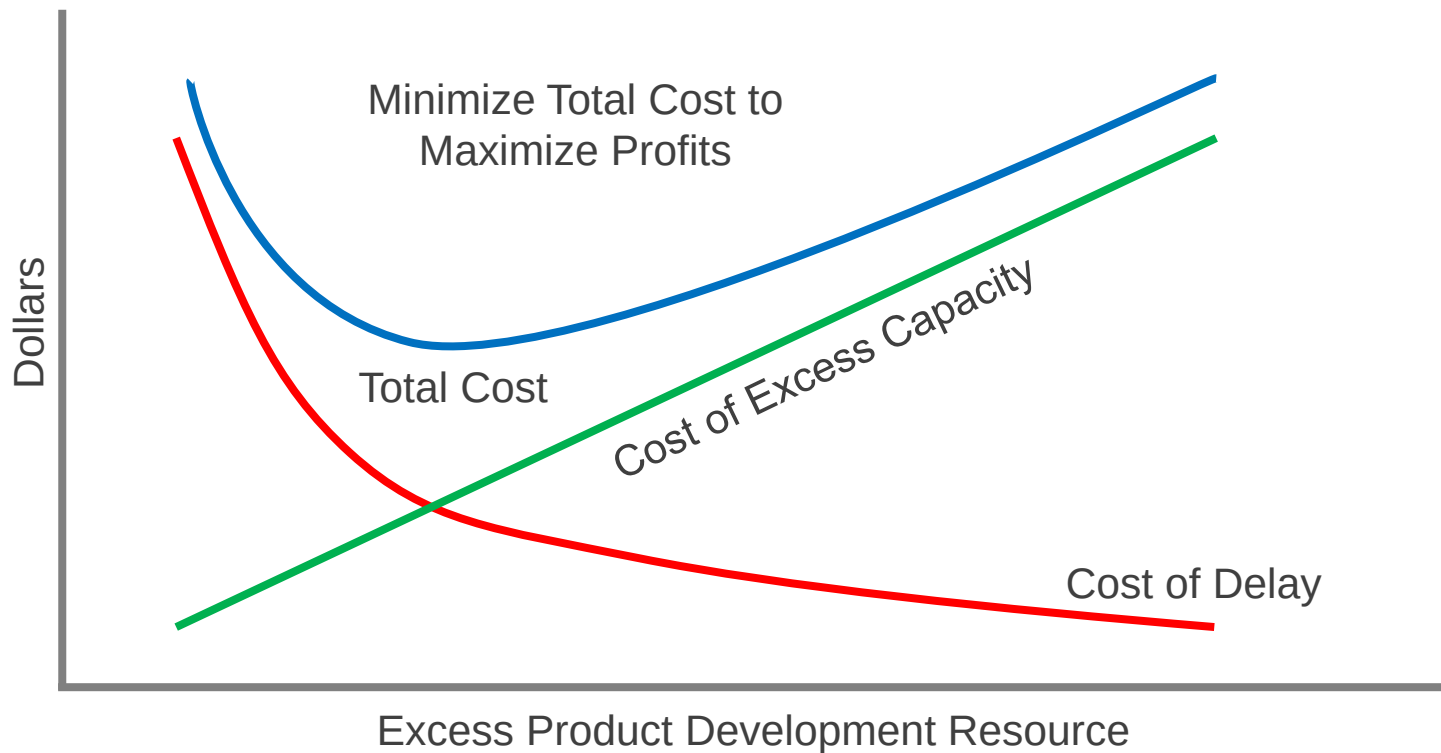
10) U Curve II – Software Quality

Managing Software Quality



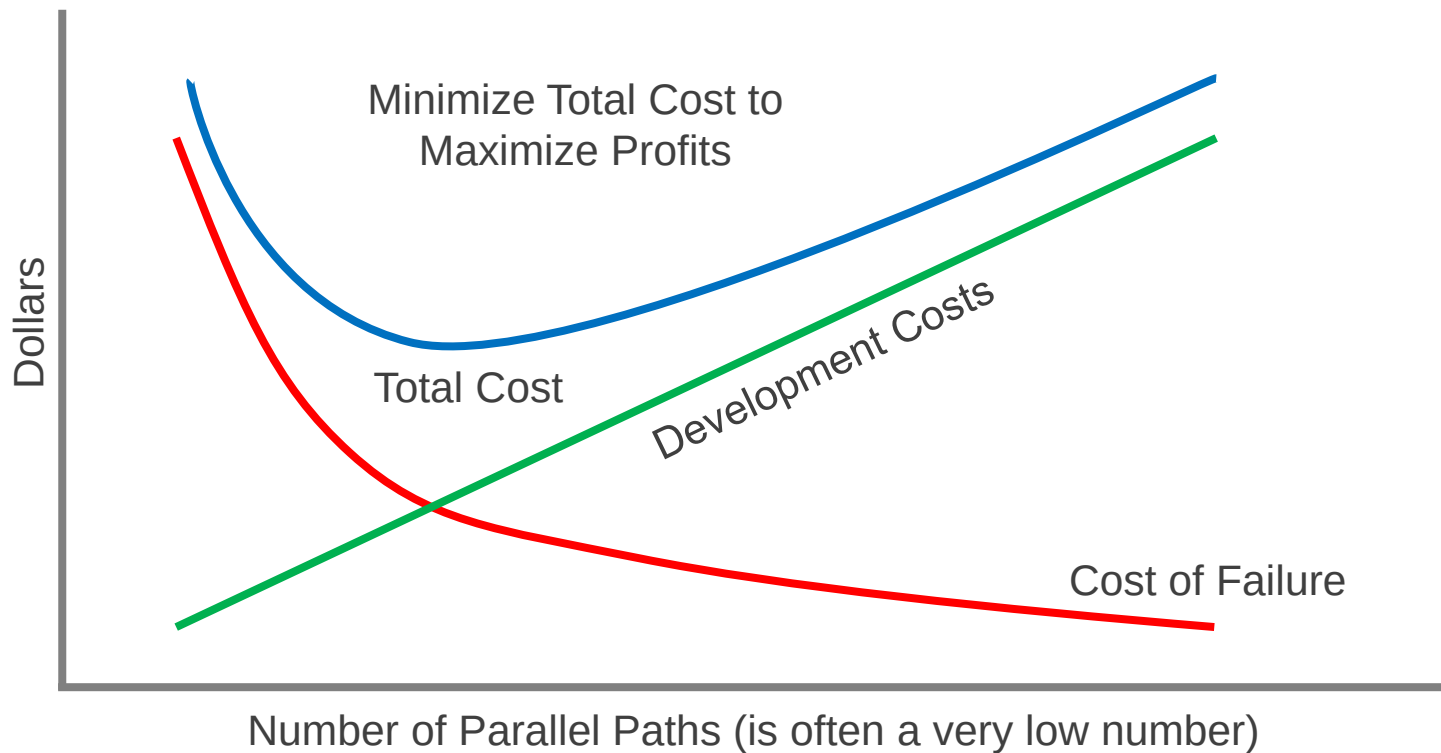
10) U Curve III – Excess Capacity

Managing Employee Capacity And Cost Of Delay



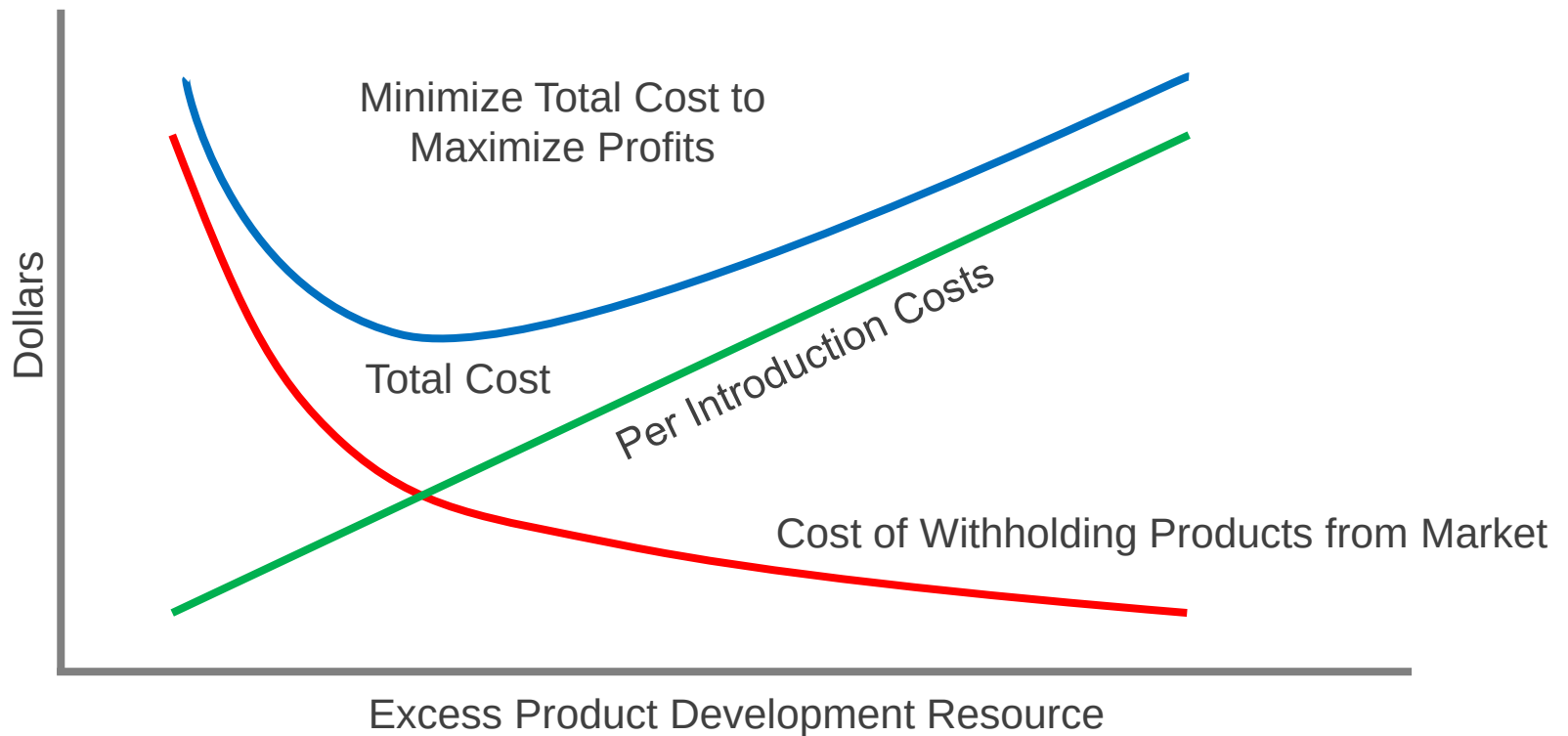
10) U Curve IV – Parallel Paths

Managing Economics of Context Switching



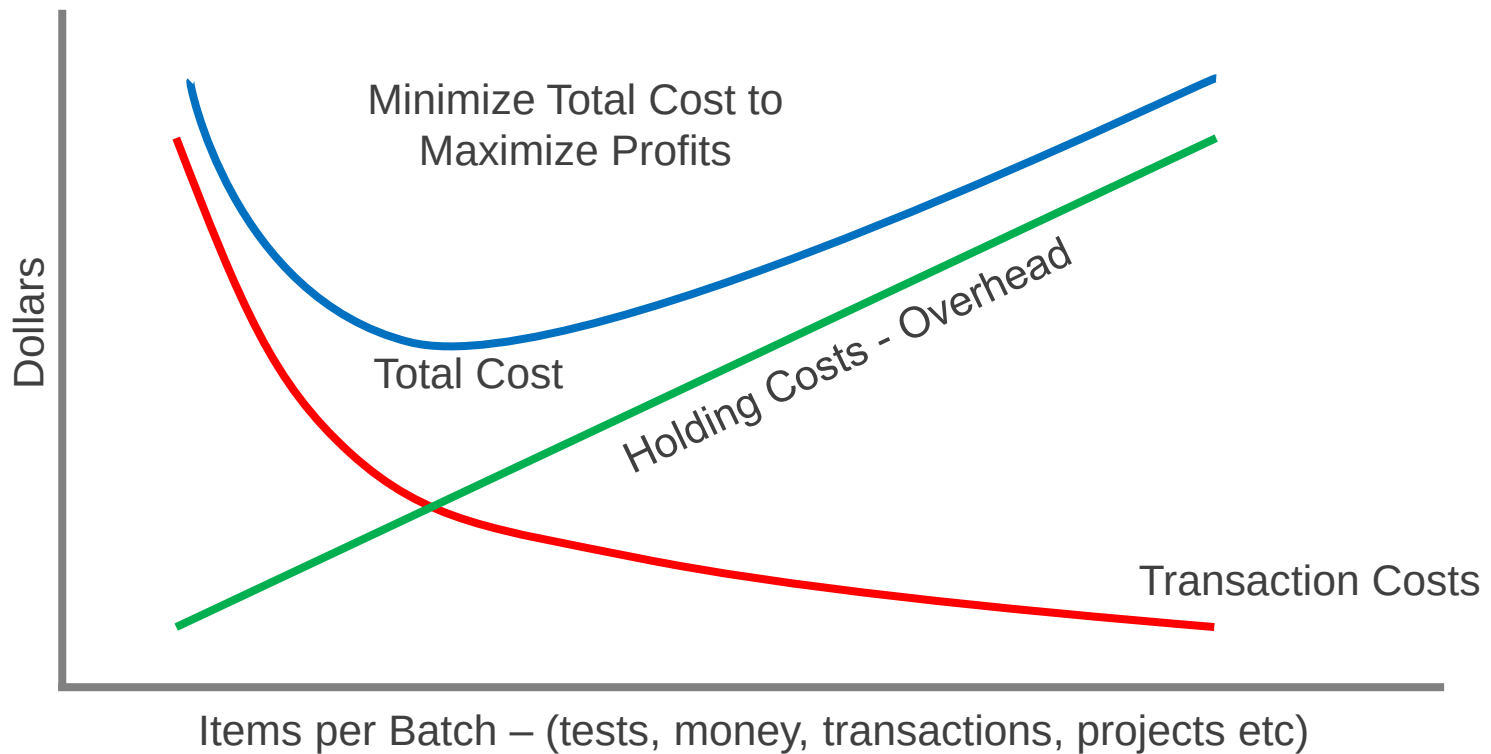
10) U Curve V – Product Increments

Managing the number of releases per year



10) U Curve VI – Batch Size

Managing Queues



Références

1. **The Principles of Product Development Flow** by Donald G. Reinertsen
2. **Lessons in Agile Management – On The Road to Kanban** by David J. Anderson
3. **Kanban** by David J. Anderson
4. **Management 3.0** by Jurgen Appelo
5. **Lean Enterprise** by Jez Humble
6. **Kanban Change Leadership** by Klaus Leopold
7. **Real-World Kanban** by Mattias Skarin
8. **Project Planning using Little's Law** by Dimitar Bakardzhiev
9. **Probabilistic Project Sizing using Radomized Branch Sampling (RBS)** by Dimitar Bakardzhiev
10. **Kanban from the indide** by Mike Burrows
11. **Kanban in action** by Marcus Harrmarberg & Joakim Sunden
12. **Commitment** by Chris Matts & Olaav Maassen
13. **Slack** by Tom de Marco
14. Effet Zeigarnik https://en.m.wikipedia.org/wiki/Zeigarnik_effect
15. SWIFT KANBAN <http://www.digite.com/>
16. Implantation Kanban de 3000 à 5000 personnes en Chine <http://anderson.leankanban.com/getting-to-pull/>
17. Variable aléatoire ou processus aléatoire ? Début à 26:44 <https://www.youtube.com/watch?v=aBFjQrQRQzs>

