



Brakelock

The new frame lock generation

March 28th 2018

BRAKELOCK is a new generation of frame lock.

Thanks to a device **braking powerfully the rear wheel of the bike**, instead of blocking it by a rod passing through like on traditional frame locks, **BRAKELOCK eliminates the breaking of spokes and wheels.**

The **anti-theft efficiency of BRAKELOCK is also superior** to that of traditional anti-theft devices: the poorly accessible braking device makes it difficult to destroy, unlike the metal rod of the traditional frame lock particularly vulnerable.

More compact, BRAKELOCK fits more easily on a bike.

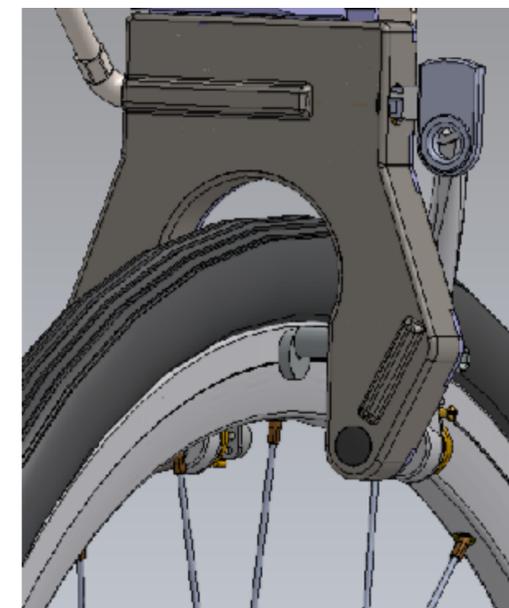
BRAKELOCK will be **activated by key or smartphone**. Some versions will integrate **localization and tracking**.

BRAKELOCK brings **strong benefits to all**: cyclists, bike brands, fleets.

Available in series: from the second quarter of 2019.



Good quality traditional ring lock with a rod crossing the wheel



BRAKELOCK, a new frame lock generation. Powerful braking device of the wheel as an ultra efficient antitheft solution

1/ The traditional frame locks



Strengths & weaknesses of traditional frame locks

The traditional frame lock (or ring lock) has been around for decades. It is widespread in the world and young bike sharing fleets operators have widespread use of this type of antitheft device, yet a significant maintenance cost.

Its architecture is very simple: a rod crosses the wheel to block it to prevent the bike from rolling. Exactly the basic principle of a stick in the wheel.

These frame locks have **several advantages:**

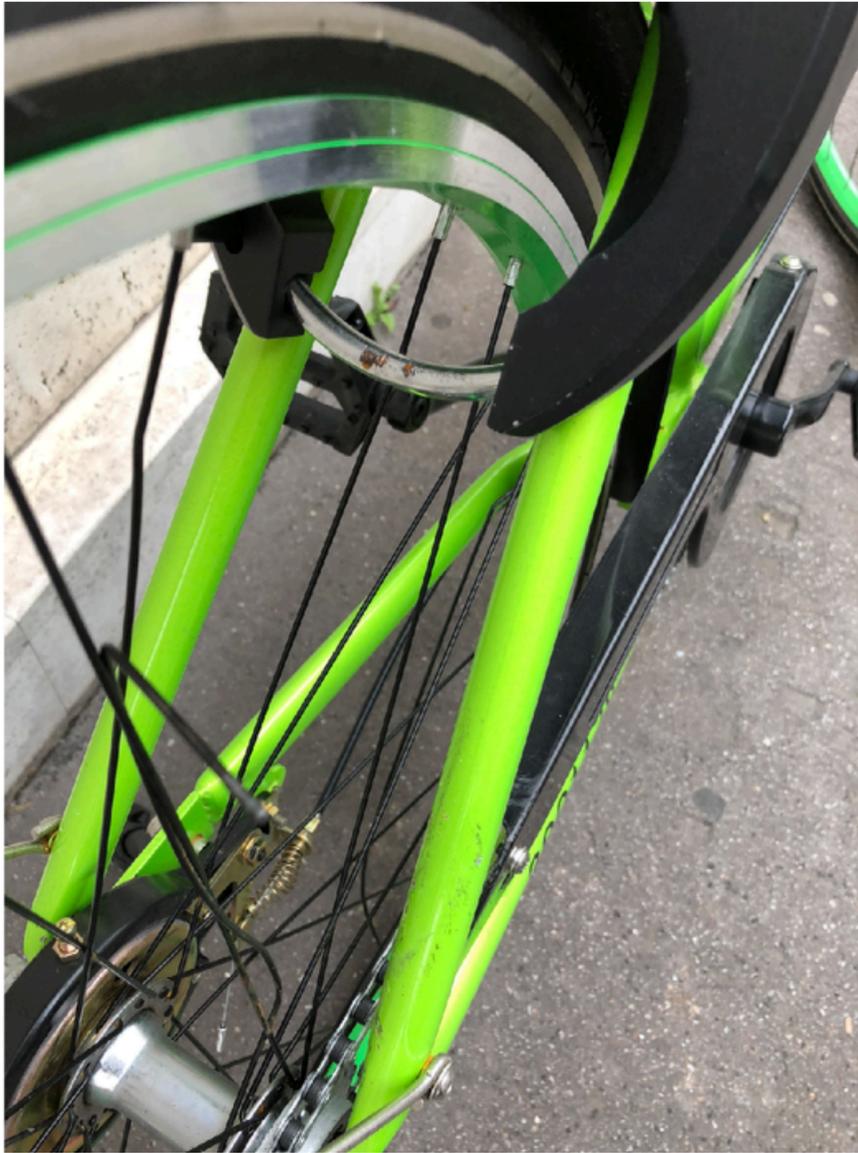
- **Permanent anti-theft** on the bike
- **Easy to use** system and well known cyclists
- **Relative efficiency** against the borrowing theft, especially by the high-end versions of the major brands.

On the other hand, the **disadvantages of traditional architecture are very important:**

- **Limited effectiveness against theft** despite the efforts of manufacturers: the locking rod is particularly accessible and can be cut with a bolt cutter or a portable grinder, for example.
- And especially, **recurring and frequent risk of shock on the spokes and, finally, the breaking of the spokes and the wheel.** The origin of the shock is often commonplace: distracted cyclist who forgets to remove the lock and starts to pedal, test of the correct operation of the bike while the ring lock is locked etc. And of course, the acts of vandalism as could be seen on fleets of bicycles. Whatever the origin, the consequences are the same: the shocked spoke twists or breaks; the tension of the wheel is unbalanced; the rim is veiled; the veil increases as and when rolling. If the broken spoke is not changed immediately, other spokes break until it becomes impossible to use the bicycle and destroy the complete wheel.

These **disadvantages impact significantly the cyclists** (repair costs, immobilization of the bike) and the **fleets** (high maintenance costs, unavailability of a part of the fleet, incitement to destroy other elements of the bicycle, impact on the brand image).

Illustrations of broken spokes



2/ The Brakelock innovation

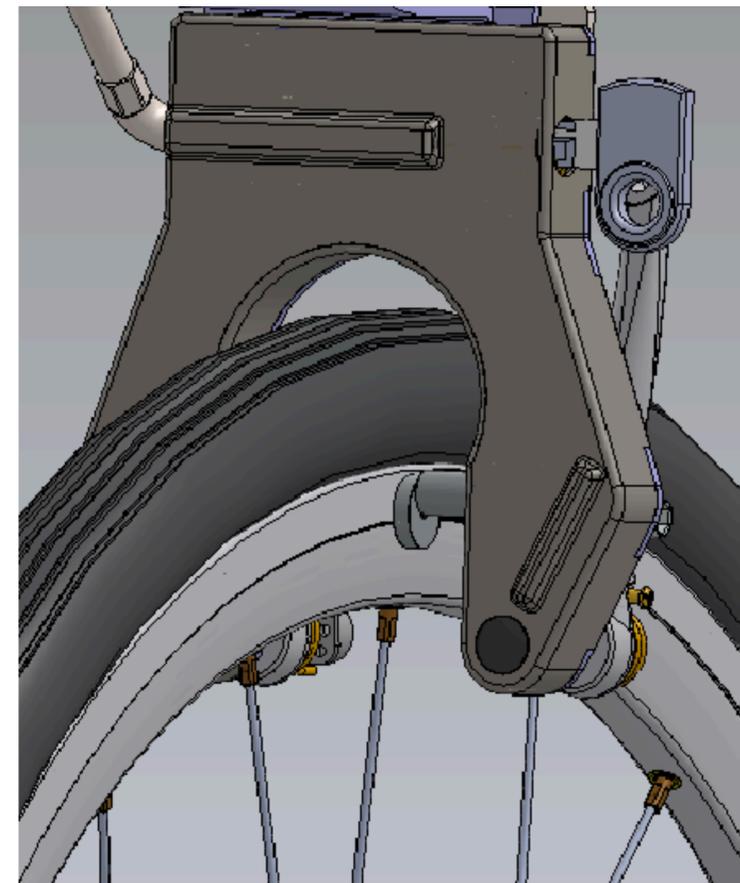
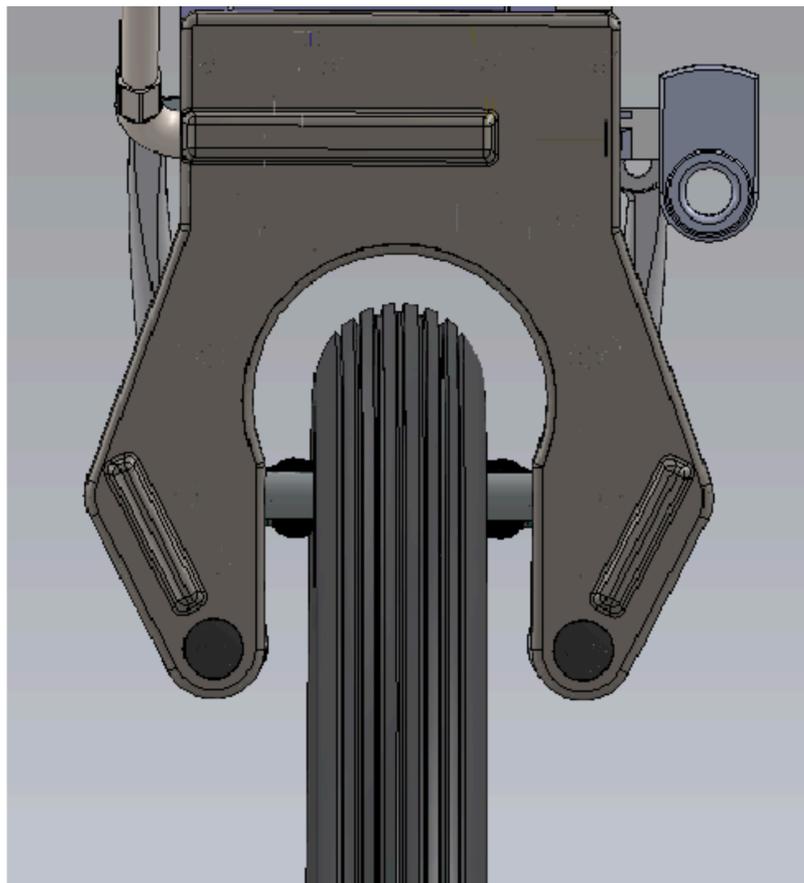


The fundamental principle

BRAKELOCK completely reinvents the frame lock (or ring lock) to improve its strengths while eliminating the disadvantages of traditional architecture, especially its low efficiency and the risk of breaking the spokes.

The fundamental concept: a powerful braking of the wheel to prevent its rotation:

- By a mechanical device applied to the rim, the tire, the hub or the disk
- Or just by using the bike's normal braking system



Brakelock innovation is protected by international pending patents

Several architectures

Several technical architectures of **BRAKELOCK** have been designed to match with the different kind of usages and exactly with the customers needs.

BRAKELOCK:

- Can be activated by a **key** cooperating with a cylinder
- An **electric control** coupled to the on-off system of an electric bicycle
- An **electromagnetic drive controlled by a smartphone**

BRAKELOCK can operate:

- Directly or indirectly
- The system can be active (it produces the pressure on the system) or passive (a spring pushes the braking device)

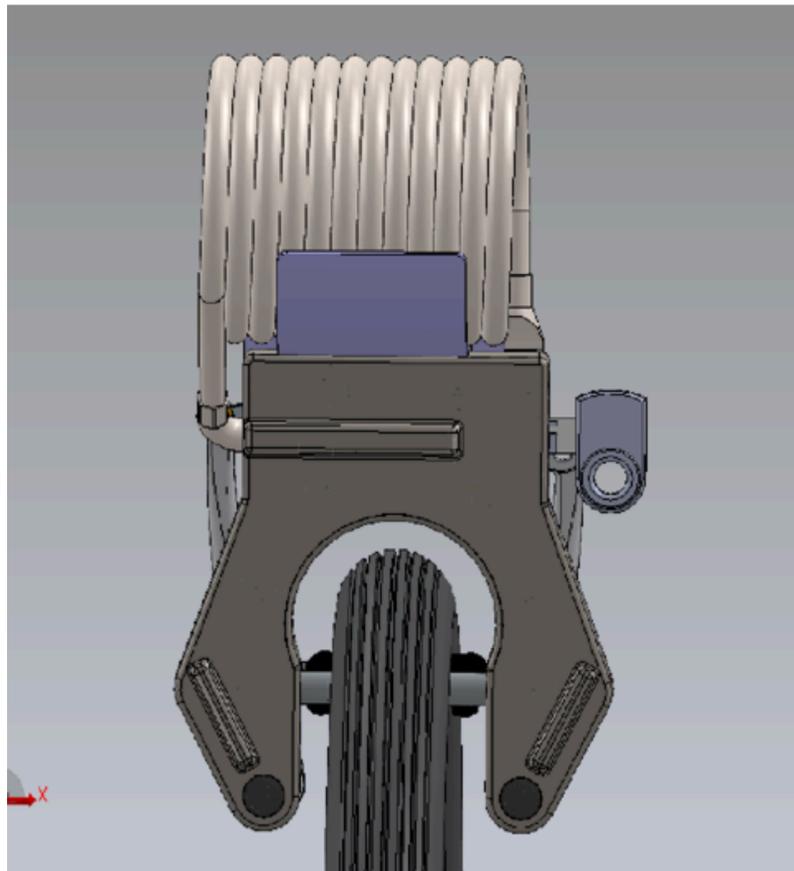
The braking system can push on the **both sides of the wheel or just on one side** to offer a very compact solution.

BRAKELOCK can be combined with a cable lock or a U lock simultaneously locked.

Dedicated versions will be designed exclusively for some major bicycle brands and fleets to optimize the integration on the bicycle and **to reinforce their brand identity**. The **supply chain** induced by this cooperation model could be reduced for more flexibility.

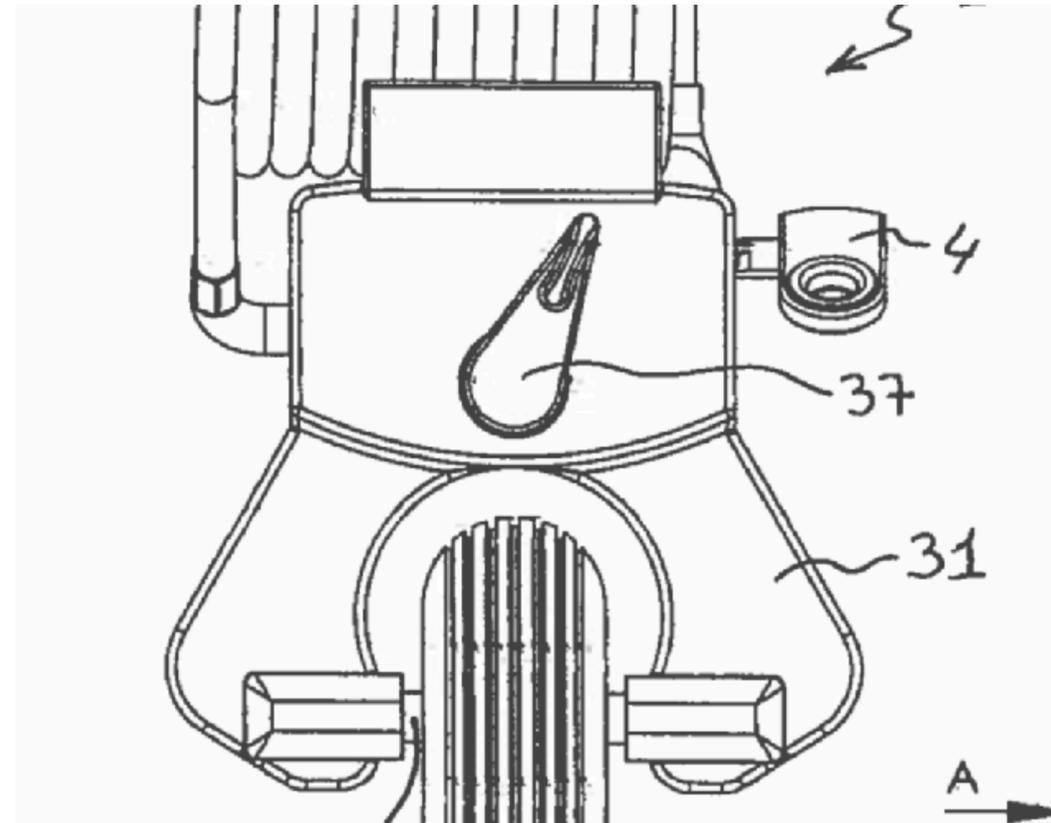
Illustrations of the architectures

Active & Indirect mechanism
on both sides



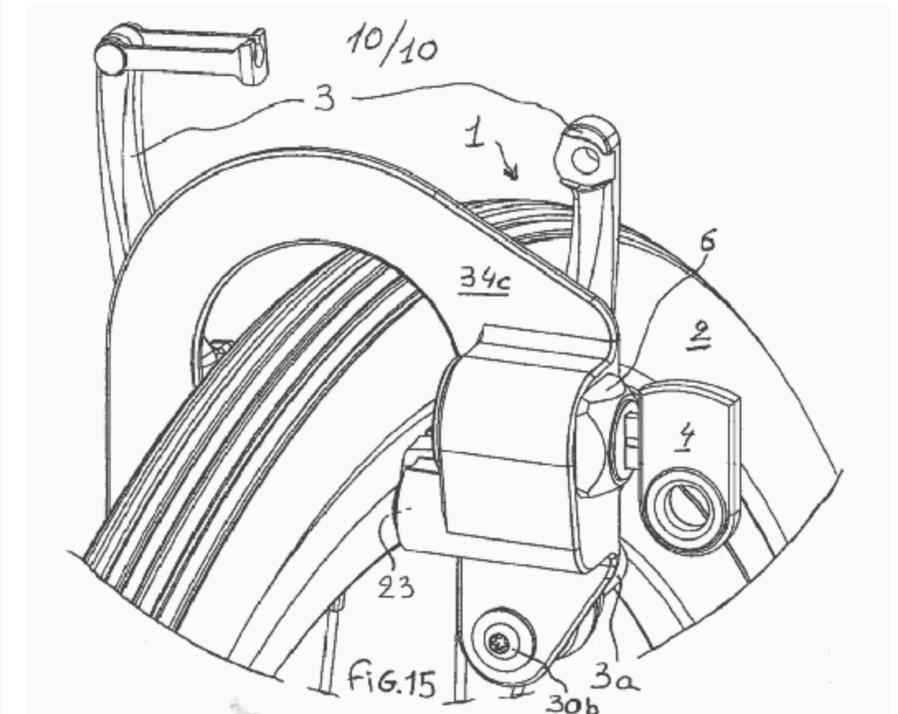
User: the simple rotation of the key locks the Brakelock

Passive & Indirect mechanism
On both sides



User: the rotation of the key allows to push the lever to lock the Brakelock.

Active & Direct mechanism
On one side



User: the simple rotation of the key locks the Brakelock

Vues issues de maquettes ou des textes de brevets. Le design définitif sera communiqué lors de la présentation des versions de série.

3/ Substantial benefits for all stakeholders



Substantial benefits for customers

BRAKELOCK brings substantial benefits:

- **To cyclists:**

- Simple ergonomics, similar to that of traditional frame locks.
- In some configurations, BRAKELOCK can be operated with one hand, while two are needed for traditional locks.
- Higher efficiency against theft (more difficult destruction, inaccessible fixing screws in anti-theft position)
- More compact system

- **To bicycle brands**

- More mounting solutions on the frame: in addition to the existing possibilities, possibility of fixing on the mounting axles of the V Brake
- Greater freedom of bicycle design (compactness, integration)

- **To bike fleet operators**

- Significant reduction in maintenance costs directly related to the removal of spokes breaks. Possibility of using spokes wheels favorable to comfort, instead of sticky wheels with high inertia and not good for comfort and performance, 2 criteria yet important in the context of urban use.
- As a result, increased fleet availability rate for a greater customer satisfaction and improved profitability.

4/ Bicycle theft, a real international plague due to the inefficiency of the traditional approach



Bicycle thieves: a real international plague

The annual figures for stolen individual bicycles are shocking, reaching hundreds of thousands thefts every year

- About 4 000 000 stolen bicycles in Europe every year (eg 600 000 in Germany, 900 000 in the Netherlands, 500 000 in France).
- Seat posts and wheels also stolen.
- Traditional locks are not efficient.
- People hesitate to buy nice bicycles or ebikes.

Concerning the bike sharing industry, we do not have international figures, just some for Velib in Paris:

- 18 879 Velib stolen in 2014 = the whole Velib fleet
- 91% are found but 4600 destroyed because not reparable
- Stolen Velib bicycles are found every where. The farrest one in Bamako (Mali)
- In the real life, it is easy to steal a Velib (1st gen.). When the lock is destroyed, every one can use it.
- The cost for the fleet operator is very high. (Total 1500 € / year / Velib including theft)

Prejudice & causes

Of course, cyclists are the first to be penalized by the plague of theft: loss of time and money, purchase of lower quality bicycles, even stopping commuting by bike.

The entire cycling industry is prejudiced by these fraudulent acts, particularly in urban bike sales:

- **Preference for second-end or basic entry model:** renew or invest as little as possible
- **Alternative:** use of a shared bicycle. A nice opportunity for bike sharing business !
- **Bicycles fleets operators are strongly impacted:** bicycles replacement, repair costs, system management, lack of revenues etc

Causes are clearly identified:

- **Standard locks not adapted and not reliable:** some of the most sophisticated locks are picked in less than one minute. Then, bicycle is free to use.
- **Velib (1st gen.) or bike shared frame lock not difficult to destroy. GPS localisation easy to interrupt.**
- **Security surveys, media reports demonstrate clearly the failure.**
- Situation is similar for motorcycles, scooters etc

5/ BRAKELOCK, a significant part of « IXOW Global Anti Theft Protection Program »



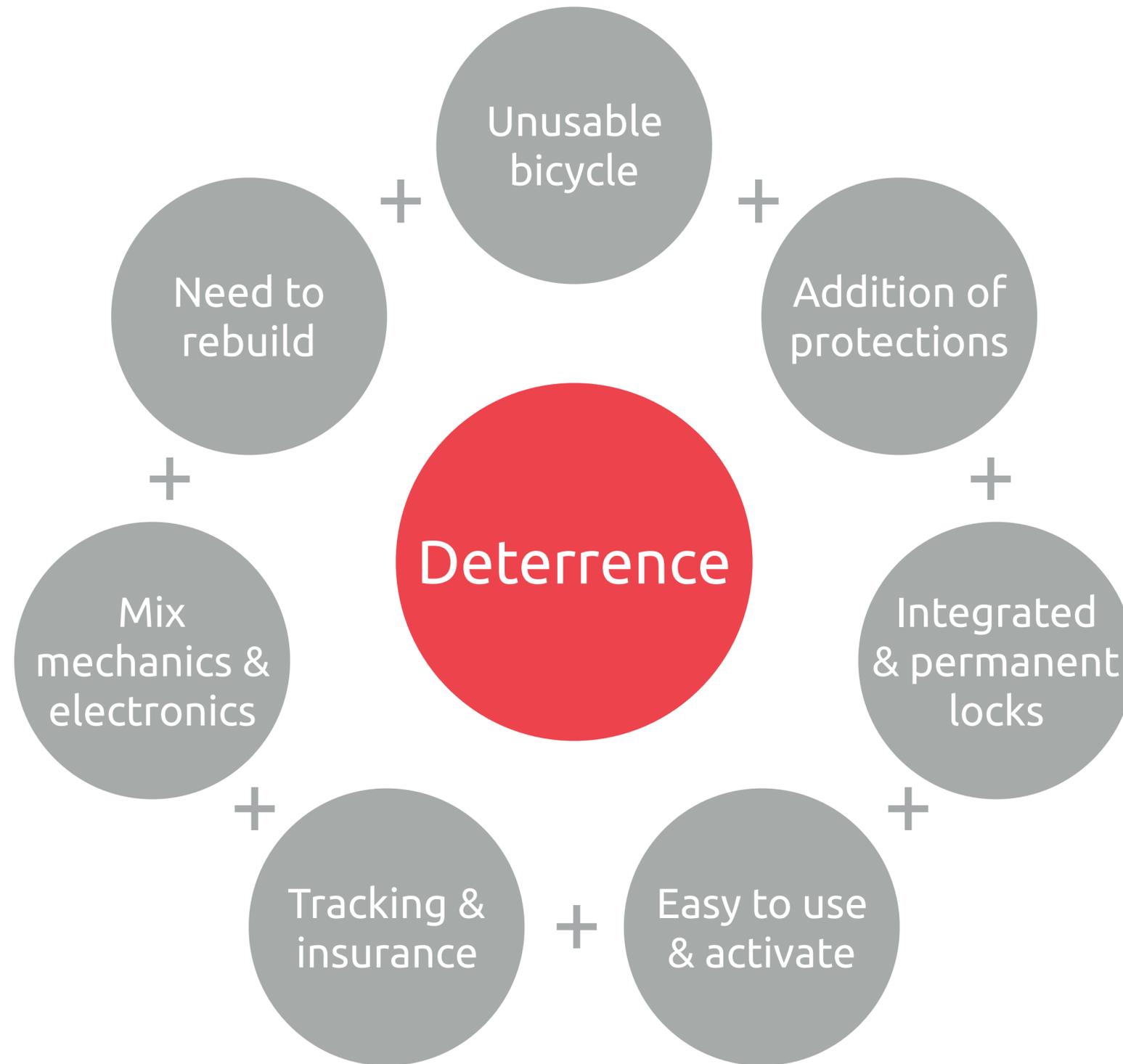
The need of radically different strategy and locks

Considering bicycle theft as a real international plague and the failure of traditional locks or solutions against theft, IXOW has developed a disruptive strategy to make security as a priority for all.

IXOW strategy is built on a global approach (Global Anti-Theft Protection Program) that completely revises the protection of the bicycle and its accessories against theft, based on:

- **Deterrence:** It is the thread. The thief has no interest to steal the bike because he should spend time and money before to use it or sell it.
- **Need to rebuild:** it is necessary to replace some components, for exemple Stemlock, before to use or resell the stolen bicycle. In comparison, traditional locks are based on the time they resist against an aggression; after they are broken, the bicycle is free to use.
- **Addition of several protections:** bicycle protection with Stemlock and/or Brakelock, seat post & wheels locks with Safering & Wheelguard, removable pedals with Pedalpark, tracking devices. As an option, a structural locking device (same key as Stemlock / Brakelock). Who would steal a car without steering wheel, seats, wheels, pedals and with a clamp ?
- **Integrated and permanent locks:** no extra locks to transport; protections always available
- **Very easy to use and activate:** to motivate people to use also for a short stop or difficult environment
- **Mix of mechanical & electronic solutions :** for an efficient global protection

A disruptive approach



A powerful combination of complementary exclusive protections

Insurance
With preferred conditions thanks to reduced risks

Tag & Tracking
Physical & Electronics



5
Years Warranty

stemlock

Ride Anti theft Park

Bluetooth™

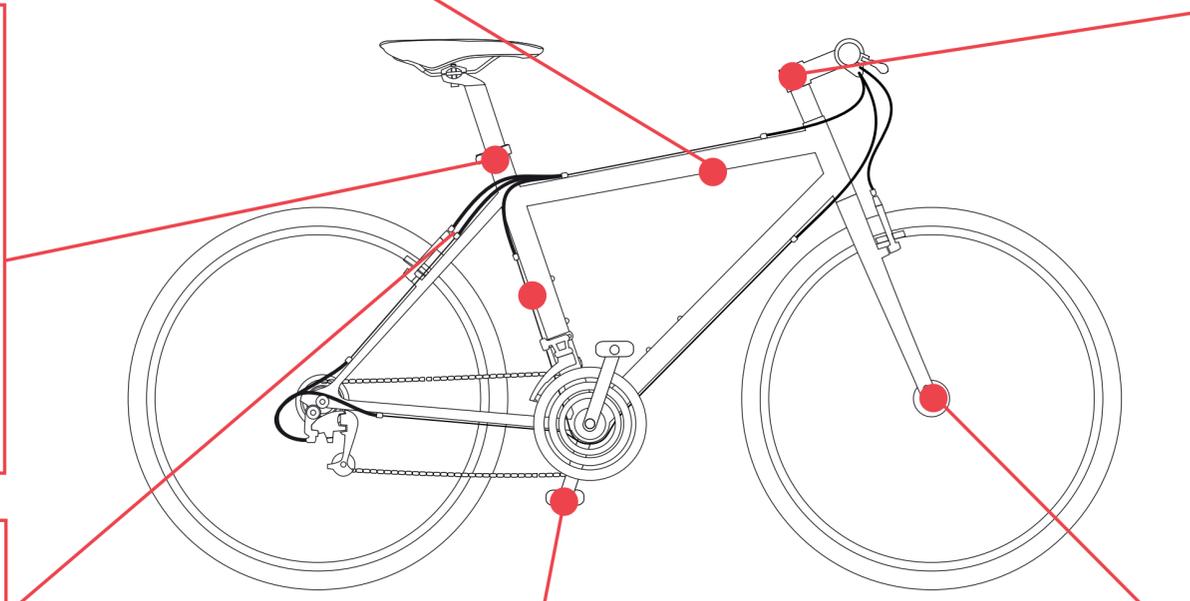
GPS

Multifunctional stem

safering

GRAVITY KEYCODE

Seatpost lock



brakelock

New frame lock generation

pedalpark

Removable pedals

wheelguard

GRAVITY KEYCODE

Wheel lock

Removable lock as an option

Thank you

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