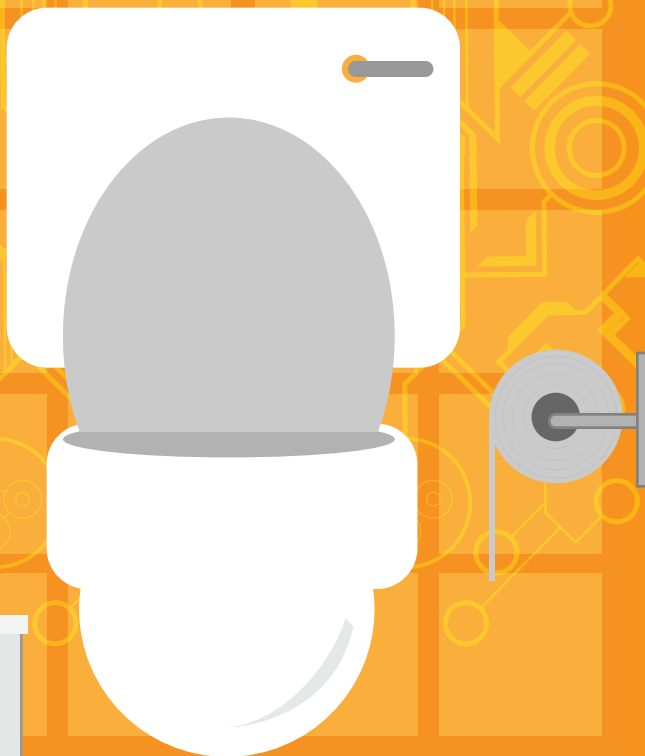# WSO₂

Connected Bathroom Manager

V 1.0.0

WSO2's state-of-the-art solution to make "Swipe before you wipe" more productive

In response to growing abuse of bathroom time by employees, WSO2 developed the fully integrated WSO2 Connected Bathroom Manager (WSO2 CBM). WSO2 CBM is a comprehensive solution that lets a customer's Chief Bathroom Officer and Bathroom Operations Group (BOG) members monitor usage and take suitable preventive, evasive and corrective action as the situation demands.
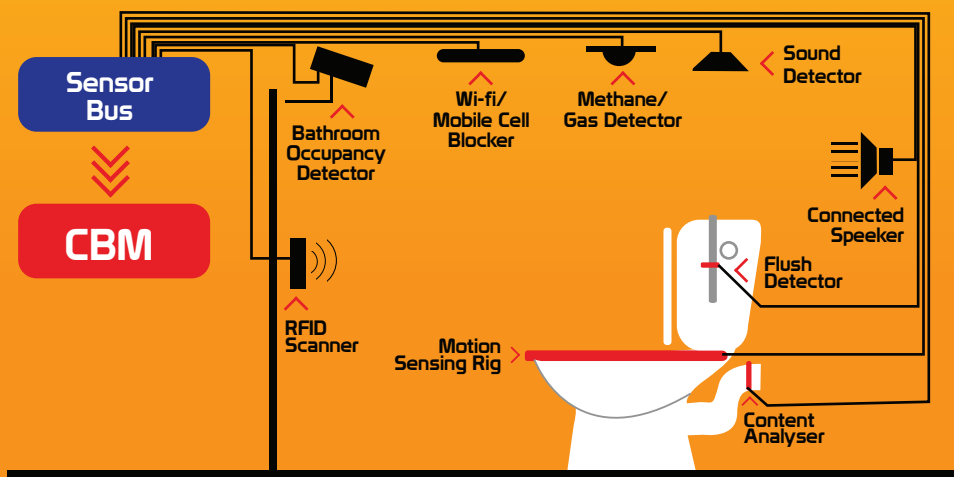
Core components of WSO2 CBM

Instrumented Toilet Stall

The first component of WSO2 CBM is the instrumented toilet stall. The stall comes with a variety of sensors to accurately measure all activity in the toilet and to stream events from them. These activities measured and exposed include:

- Number of sheets of toilet paper used
- Amount of water used (in case of alternative cleaning technologies)
- Number of flushes
- Number of splashes during the process
- Volume of liquid matter released
- Volume of non-liquid matter released

The advanced version of this toilet will also come with a real-time urinalysis that uses a video camera to extract a video stream of the urine stream and apply numerous patent-pending feature detection algorithms to isolate the chemical content of the stream. This analysis is then real time streamed to the WSO2 Complex Event Processor which combines the information to compute overall summaries as well as to analyze a particular users separate visits' output over a period of time.

Connected Bathroom - Sensor Layout

Sensor Bus

CBM

Bathroom Occupancy Detector

Wi-fi/ Mobile Cell Blocker

Methane/ Gas Detector

Sound Detector

Connected Speeker

Flush Detector

RFID Scanner

Motion Sensing Rig

Content Analyser

WSO2 Connected Bathroom Manager Dashboard

WSO2 CBM will allow the company's Chief Bathroom Officer to monitor utilization of all bathrooms in all facilities in a single integrated dashboard. Automatic alerts will be sent when particular employees violate the Bathroom Optimization General System (BOGS) policies.

Advanced Machine Intelligence

One of the advanced features of WSO2 CBM is sophisticated data analytics using WSO2 Machine Learner.

- Quality Food Detection - Given the ongoing historical analysis, WSO2 CBM will know the average "normal day" bathroom utilization behavior of every employee. Then if WSO2 CBM detects that some person or persons are using the facilities more often than before and that those usages are legitimate (instead of breaks to play Candy Crush), it will trigger a special event via the WSO2 Complex Event Processor. This event can then be used to do deeper analysis of all users to see whether there are any patterns. If registered users had used ThreeSquare to tag the place where they had lunch, CBM would correlate that information with bathroom usage stats to see whether there's any unusual usage. Given that all the data is uploaded to the WSO2 Bathroom Cloud (with full anonymity of course), we will be able to use data from multiple deployments to instantly detect that there's a problem with the food quality at a particular food outlet because everyone who went there ended up using the facilities (legitimately) way more often than normal. We will then be able to use the SmartCity Health Reporting API to alert health management authorities that there may be a problem brewing even before customers have reached out to the restaurant to complain.

- Integrated Connected Cup kickstarter data - So we know what you drank and how much you are likely to need to go to the bathroom.

- Predictive behavior and resource allocation - allowing a company to have fewer bathrooms than OSHA requires and yet maintain the required SLAs.

- Determining legitimate or false usage of a toilet - Another use of advanced machine learning to remember patterns of typical usage, connected to food and drink consumption, monitoring of stress levels by monitoring blood pressure etc.

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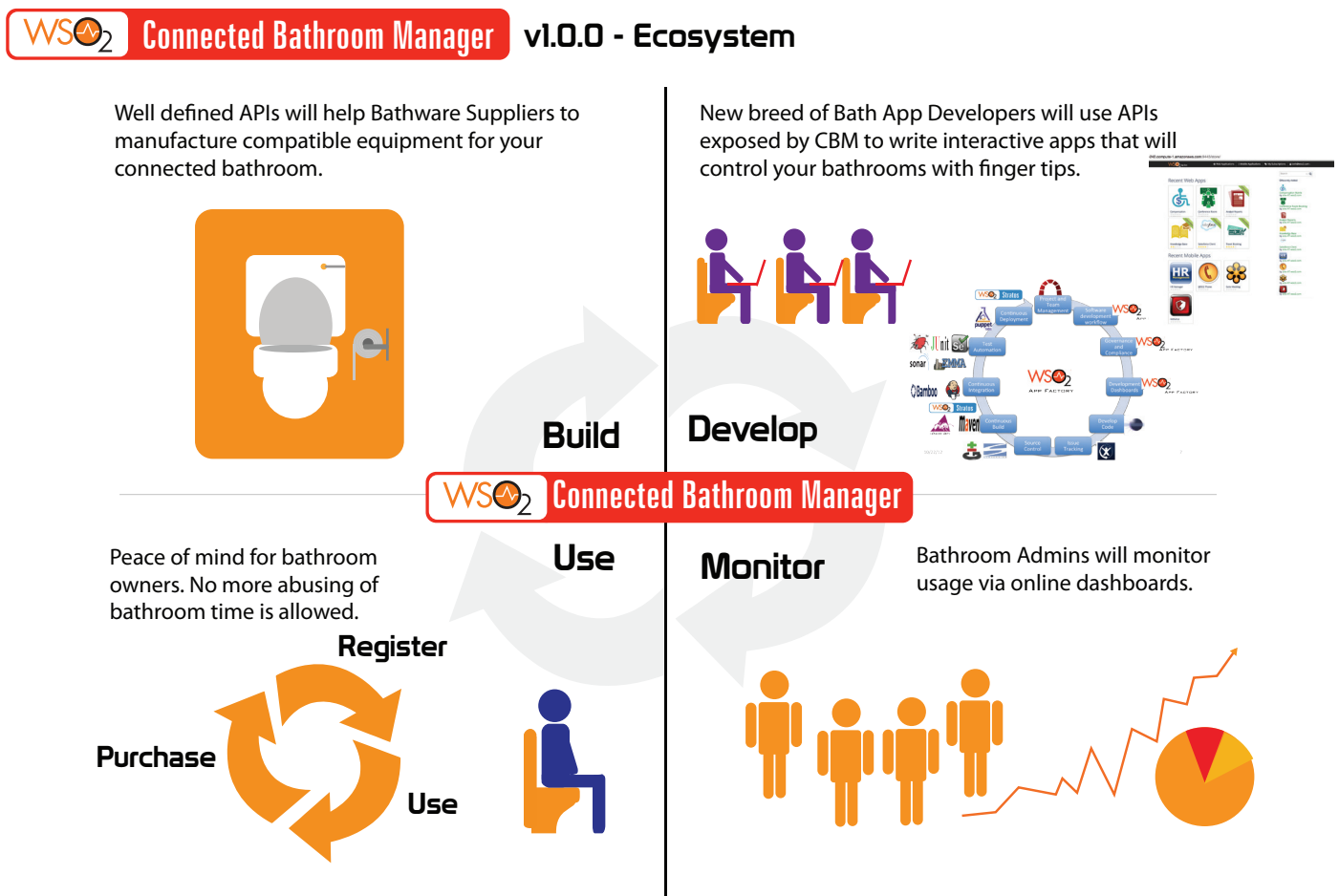
Determining legitimate or false usage of a toilet

Another use of advanced machine learning to remember patterns of typical usage, connected to food and drink consumption, monitoring of stress levels by monitoring blood pressure etc.

WSO2 CBM Home Edition

WSO2 also plans to offer a cloud version of WSO2 CBM for homes with teenage children. This is to address the big problem parents of teenage children have with the child spending hours in the toilet supposedly "getting ready". Even tech savvy parents have complained that even stopping wifi doesn't work any more because the teenager simply turns on data to continue on Snoopchat - or just switches to playing Choco-Crush on the phone.

Parents who have signed up for WSO2 Enterprise Mobility Manager (WSO2 EMM) to manage the teen's phones, tablets and laptops will have complete power over their teenage children's bathroom abuse. The teen version of WSO2 CBM will be specially designed to take over the phone in the toilet if the person is violating the reasonable toilet use rules of the home and play old time country music songs known to be most hated by teenages. The first song to be played is "Country Roads Take Me Home" but the selection will be improved based on the reaction of teenagers to the music - number of times they shake the phone, press random buttons trying to stop the music etc.. The improvement will be combined with parent config-ured business rules running in the WSO2 Business Rules Server combining of course with real time assist from WSO2 CEP and learning by WSO2 ML. The music will be designed to become even worse (going to 40s favorites) as the teenager remains in the toilet longer.

WS02 Connected Bathroom Manager v1.0.0 - Ecosystem

Well defined APIs will help Bathware Suppliers to manufacture compatible equipment for your connected bathroom.

New breed of Bath App Developers will use APIs exposed by CBM to write interactive apps that will control your bathrooms with finger tips.

Build

Develop

WS02 Connected Bathroom Manager

Use

Monitor

Peace of mind for bathroom owners. No more abusing of bathroom time is allowed.

Bathroom Admins will monitor usage via online dashboards.

Register

Purchase

Use

Integration with other connected bathroom products

- Measure toothbrushing patterns of kids with White **Oral-B Pro 6000 Smartseries** with Bluetooth (http://www.oralb.co.uk/en-GB/product-detail/new-white-oral-b-pro-6000-smartseries-with-bluetooth)
- Control bathroom lighting with **Phillip Hue** (http://www2.meethue.com/en-us/)
- Check & record your weight with **Fitbit aria** (https://www.fitbit.com/aria#i.1adcxo21dejdzo)
- Have music on toilet paper holder with **iCarta 2** toilet paper holder (http://www.connectedly.com/icarta-2-toilet-paper-holder-boasts-bluetooth-stereo)
- Take pictures with Sensor Mirror (http://www.simplehuman.com/sensor-mirror)

Out of the box support for

- Pimped Out Toilet (http://www.cepro.com/slideshow/image/3730/)
- Unique Automation's Bathomatic (http://www.cepro.com/slideshow/image/3727/)

WS0₂ Connected Bathroom Manager V 1.0.0 Component Architecture