

Turning garbage into growth the future city way

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Waste is the eternal burden of civilisation. The earliest known urban garbage dumps are found in Crete, made over 5,000 years ago. Not long after that, experiments with recycling began: Chinese societies reused bronze and the Aztecs routinely rescued usable materials from their garbage piles.



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Even regulation is not new: Athenian Greeks decided over 2,500 years ago that a dump should be located more than a kilometre away from settlements.

Growing urban populations are placing heavy demands on modern waste disposal. There simply is no space to breathe, even in smaller municipal areas. This is made more acute by growing demand for responsible waste handling, driven by new environmental regulations.

Even though such regulations are sound and broadly supported by nations, across Africa, implementation is very hard when it needs to be pinned on a running target: explosive population growth.

According to research conducted by United Nations Economics for Africa in 2012, effective and modern waste management practices are still lacking on the continent. An unrelated 2014 study published in the National Centre for Biotechnology Information's journal found that nearly no households in Ghana's capital Accra recycled any waste and more than a third of the city's garbage was being disposed of through illegal and unregulated dumping. Services are also lacking, as over 60% of people paying for proper waste removal by private contractors were not happy with what they got.

Solutions

Yet users of those services are by no means ignorant of the need for urban sanitation, firmly agreeing on the connection between disease and garbage. Instead, the major paradigm shift needs to come from policies and systems at national and regional level. It's a picture that can be drawn for many of the continent's nations. Improvements in infrastructure are urgently needed to combat the high cost of health services and thereby alleviate poverty and reduce the pressures of rural-urban migration.

If only the solution was as easy to make as that statement. Waste collection has to operate like clockwork or risk cascading into a series of massive disruptions. For example, the breakdown of a single truck can delay collection by a day, not only leading to upset citizens but a ripple effect across the entire management ecosystem. At the same time waste management outfits are under pressure to cut operational costs, so there may simply not be another truck to deploy.

Yet even if there was an available vehicle, how can operations identify the problem in an actionable time frame, all while managing the disruption over other areas? In some scenarios, such as a worker strike, the delays can become catastrophic, requiring weeks - even months - to recover all the overflow waste and align schedules back to normal.

There are three core problems that affect waste management systems: no end-to-end control, processes and information trapped in silos, and an inability to respond and plan in real-time to scenarios.

Smart cities

In recent years a lot of noise has been made around the concept of Smart Cities. Waste management groups cannot be blamed for rolling their eyes when hearing about yet another futuristic 'solution' to a complicated set of challenges. Yet in some cases hype and reality do meet up. By integrating tried-and-tested waste management solutions with an Enterprise Resource Planning (ERP) culture, the ambition of a real-time, end-to-end approach to reducing garbage is very attainable.

SAP, market leader in enterprise application software, has partnered with waste management expert PROLOGA, to address many of the challenges around this industry: from route planning, real-time equipment oversight, staff management and citizen services to meeting regulatory benchmarks and forward-planning through data collection and predictive analytics. The SAP Waste and Recycling application melds seamlessly with an SAP ERP (enterprise resource planning) system, implemented by experienced partners such as Yash Technologies. Through this solution managers can control equipment age, track disposal bins, align pickup schedules to refuse levels in bins, plan routes with on-the-ground feedback, comply with environmental laws, facilitate recycling economies and more.

SAP waste management technology solutions have many possibilities that are developing from day to day. Amongst others, they are currently also playing a role in helping manage issues related to infectious disease outbreaks in Africa, such as cholera and Ebola. In another example, the central African nation of Gabon is growing its appeal as a tourism destination by tackling the waste problems of its capital Libreville. The city's inhabitants also quickly cottoned onto the benefits of a cleaner environment, resulting in less littering and proactive beautification of the area.

These are not concepts of tomorrow. Smart technologies are slowly expanding into modern urban environments, fuelled by the growth of high speed fibre and mobile networks. Seoul in South Korea is one of several cities trialling smart garbage bins: these will send notifications when they need to be emptied, thus saving unnecessary trips and enabling a proactive approach to waste disposal. The project projects a 20% reduction in waste removal trips.

Alternatively, waste can simply be shoved into walls, as the Romans did by breaking down pots that imported olive oil from Spain and insulating their homes with the shards. Whatever was left formed massive garbage piles that today are the happy playgrounds of archaeologists. Sadly (or perhaps fortunately) the nature and scale of today's waste makes that idea impractical. Besides, who wants today's legacy for the future to be giant rubbish dumps that future PhDs trawl in hope of a good grade?

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