Mobile-based Application to Induce Human Behavioural Modification towards Sustainability

Life Cycle Indonesia
Towards Sustainable Indonesia

KELARBOS

David Adiwijaya[1*], Jessica Hanafi[1], Fabiola Angelica[1], Calvin Sulistio[1]
[1] PT. Life Cycle Indonesia, DKI Jakarta, Indonesia
Poster presenter: David.adiwijaya@lifecycleindonesia.com

Background

One of Indonesia's biggest challenges as a developing country revolves around human capital who work in various sectors and play significant part in operation.

131 million workforce
out of 271 million population

There will always be a room for improvement to generate less waste and be more efficient within every operation in each organisation. There are up to 131 mio workforce in various sectors and the highest proportion (29.23%) of workforce were employed in the food and beverages industry. **One of the biggest contributor to this loss is human handling** (Bappenas, 2021), which we experienced firsthand.

Common root causes are:

1. Lack of Knowledge
Investment required for knowledge-sharing is high. Remote and inaccessible places do not have ready access to the knowledge that could aid their work
- Few trainer
- There are too many people to be trained

2. Capacity to understand procedures
The capabilities to progress relied on the human capitals ability to adapt. In several cases, physical capital and educational background were met but inability to keep up played a big part in hindering progress. Despite repetitive training being done.

3. Lack of Discipline:
Unsupervised, it is difficult for workers to comply with pre existing Standard Operating Procedure (SOP). lack of employee accountability

4. Ignorance
It is common for workers to ignore new methods of work, in preference of their previous approach.

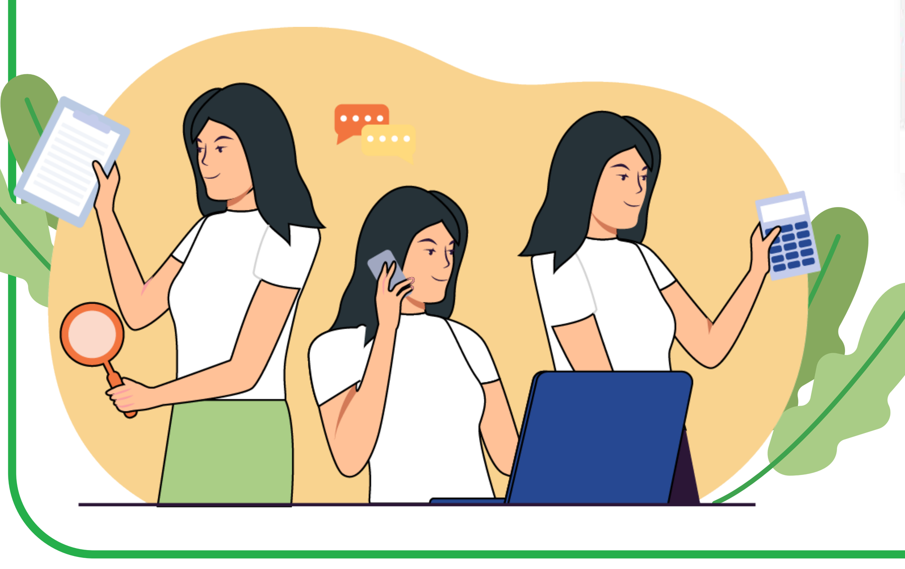
Causing inefficiency and loss

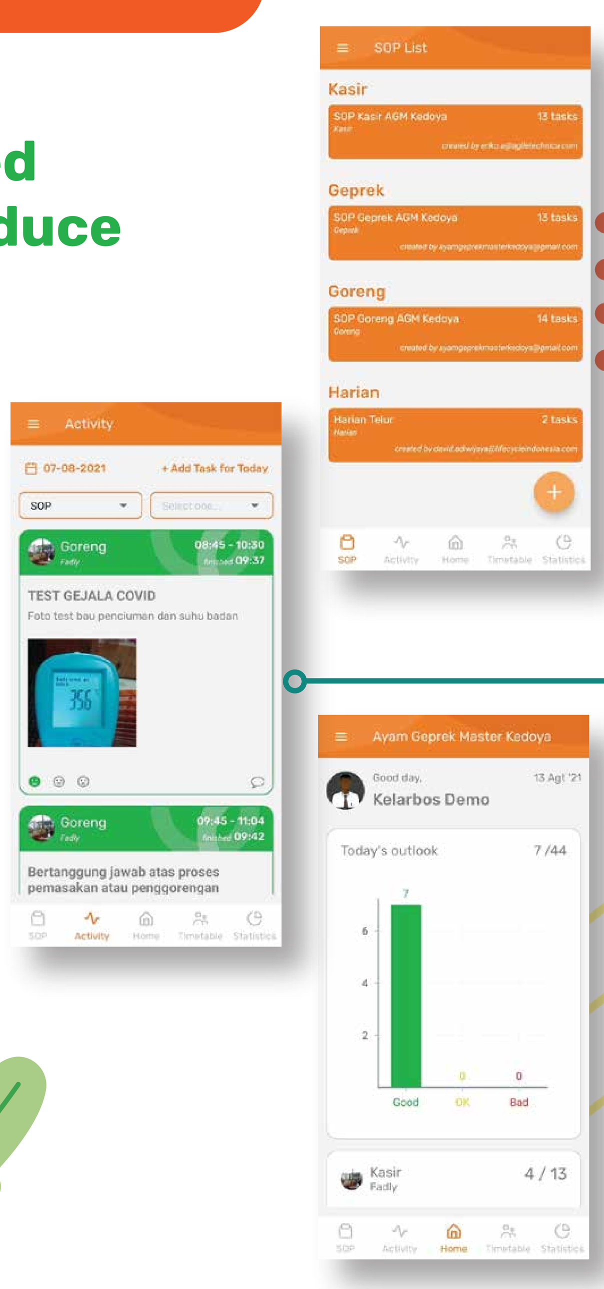
Up to 184 Kg food loss & waste per capita per year and ranges between 23-48 million tons/year in the last 20 years

Mobile-based Application-KelarBos

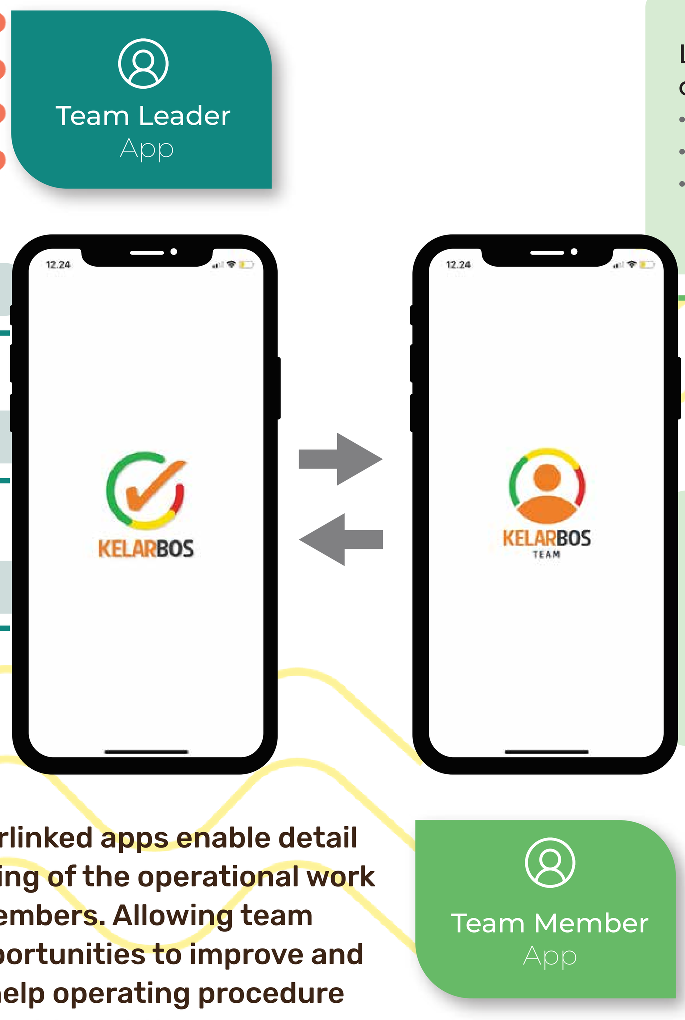
We developed a mobile-based application "KelarBos" to induce human behavioral changes.

This mobile-based application is called "KelarBos". It refers to a slang commonly used in Indonesia when the team members completed a job to their team leaders. They will say Kelar Bos. "Kelar" means completed and "Bos" is referring to their supervisor.



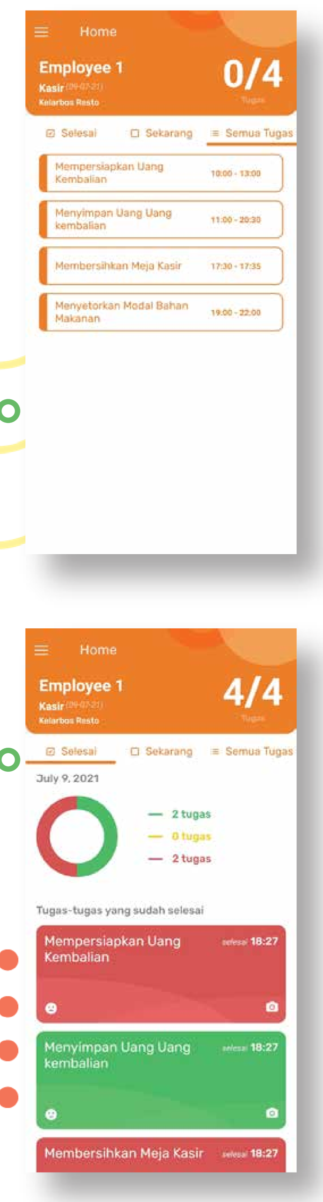


KelarBos is a digitalized standard operational manager application that enables effective and efficient remote operation management. KelarBos consists of two separate applications with distinct features:



List of SOP which is clearly identified by:
- Time completion
- How to
- Feature that proof it is actually done

Individual historical performance and performance comparison among the team will lead to gamification.



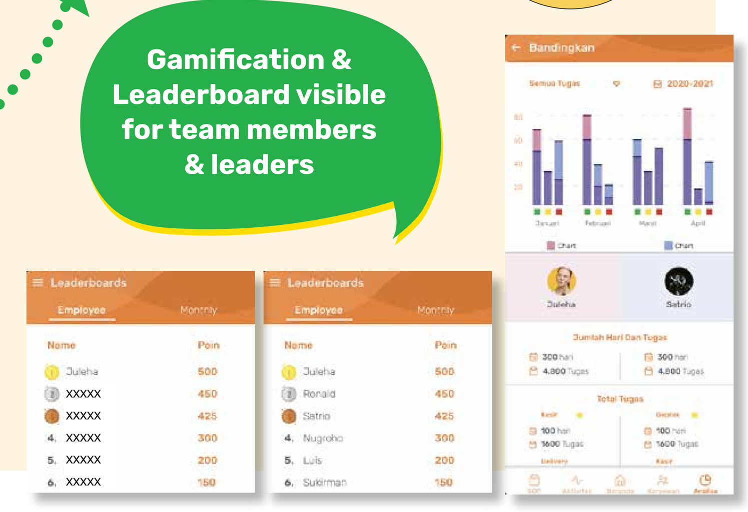
Having these two interlinked apps enable detail and constant monitoring of the operational work performed by team members. Allowing team leaders to identify opportunities to improve and hotspot areas which help operating procedure continuous improvement to get the maximum and most efficient result.

How KelarBos Enables Behavioural Change?

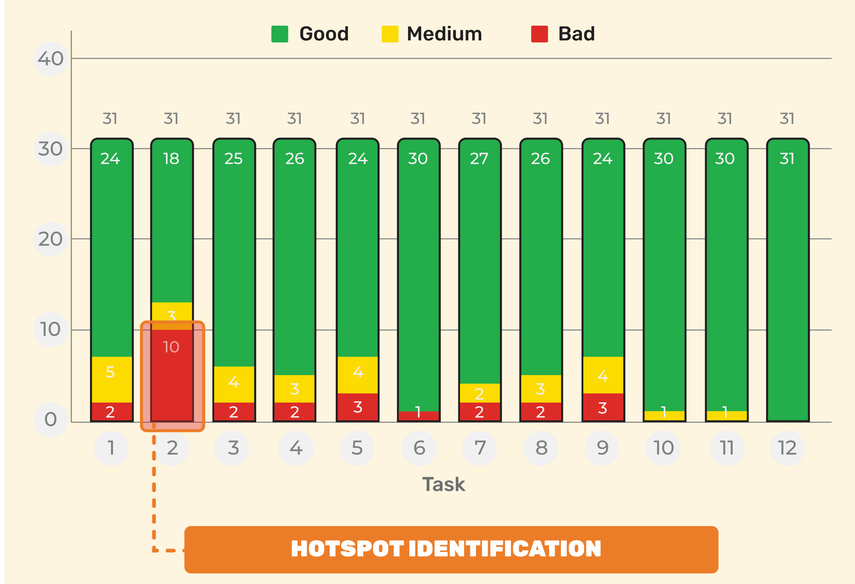
Kelarbos enables real time monitoring and analytical dashboard to promote behavioral change through:

Gamification and leaderboard performance evaluation

Gamification & Leaderboard visible for team members & leaders



Behaviour analytic hotspot identification



Team's best-fit & non-fit identification

Cashier	Bad	Medium	Good	Total Task in a Month
Juleha	78.13%	6.25%	15.63%	160
Ronald	3.43%	8.86%	91.14%	160
Satrio	5.34%	5.53%	89.13%	160

Not-fit
Best-fit as Cashier

Cook	Bad	Medium	Good	Total Task in a Month
Juleha	71.88%	9.38%	18.75%	160
Ronald	1.88%	4.38%	93.75%	160
Satrio	0.00%	3.75%	96.25%	160

Best-fit as Cook

Case Study: Local Restaurant

- Reduction of food waste at food outlet (from 35% to 1% loss)
- Improved employees motivation
- Better operational management without excessive effort for improved quality control at gas station
- Supporting implementation of good agricultural practices for urban farming

Conclusion

01 This app provides knowledge transfer using affordable and existing infrastructure to educate workers.

02 Specific user experience architecture based on existing SOP which could be monitored by the checklist feature, creating self-fulfilment and a sense of empowerment in their day-to-day tasks, providing a sense of achievement.

03 Dashboard feature could provide a performance comparison which incites motivation whether by social pressure among their peers and drive to achieve better. This way could be conducted without any monitoring incentive compensation or social harm.

04 This app has the potential to see every SOP from different sector, to obtain the best methodology yielding the best outcome for continuous improvement.

References:

1. Sorensen, C., 2011. Enterprise mobility: Tiny technology with global impact on work. 1st ed. New York: Palgrave Macmillan.
2. Su, C., 2009. Effective Mobile Assets Management System Using RFID and ERP Technology. In: 2009 WRI International Conference on Communications and Mobile Computing. IEEE.
3. Knoesen, H. and Seymour, L., 2016. Designing a Process for Identifying and Managing the Benefits of Mobile Enterprise Applications in the Insurance Industry. In: SAICSIT '16: Proceedings of the Annual Conference of the South African Institute of Computer Scientists and Information Technologists. New York: Association for Computing Machinery.
4. Basole, R., 2004. The value and impact of mobile information and communication technologies. In: Proceedings of the IFAC Symposium on Analysis, Modeling and Evaluation of Human-Machine Systems.
5. Gelogo, Y. and Kim, H., 2014. Mobile Integrated Enterprise Resource Planning System Architecture. International Journal of Control and Automation, 7(3), pp.379-388.
6. McWherter, J. and Gowell, S., 2012. Professional mobile application development. Indianapolis, Indiana: John Wiley & Sons.
7. Badan Pusat Statistik (BPS), 2021. Proporsi Tenaga Kerja pada Sektor Industri Manufaktur (Persen), 2019-2021. [online] Available at: <https://www.bps.go.id/indicator/9/1217/1/proporsi-tenaga-kerja-pada-sektor-industri-manufaktur.html> [Accessed 13 August 2021].
8. Badan Pusat Statistik (BPS), 2021. Angkatan Kerja (AK) Menurut Golongan Umur. [online] Available at: <https://www.bps.go.id/subject/6/tenaga-kerja.html#subjekViewTab5> [Accessed 13 August 2021].
9. Ministry of National Development Planning (Bappenas), 2021. Food Loss and Waste in Indonesia. [online] Jakarta, Indonesia: Ministry of National Development Planning (Bappenas). Available at: <https://lcdi-indonesia.id/wp-content/uploads/2021/07/Report-Kajian-FLW-ENG.pdf> [Accessed 13 August 2021].

LCM 2021