SMART DRINKING WATER HEALTH MONITOR
Drinking Water is one of the essential needs of life for survival. Unfortunately, this essential resource is depleting day-by-day in many nations across the world due to various factors like effluents into river or other water bodies, plastic contamination, etc. Clean and contaminant-free drinking water, from various water bodies, is difficult to achieve in many developing nations. As a result of which, people are affected with various chronic diseases. Ruling governments, NGOs and other institutions are trying to conserve the drinking water that is suitable for consumption and re-cycle in some cases.

With the growing technological advancement, drinking water can be preserved by applying various measures and clean drinking water can be provided to each household across the world. In this case, government can collect the drinking water parameters like Total Dissolved Solids (TDS), pH, Turbidity, Hardness, E-coli, etc. from the Water purifiers installed in house-holds across various regions, with the help of Internet of Things (IoT).

SAP Connected Goods can help the government officials to collect the water parameters directly from the Water purifiers installed in various house-holds. Water purifiers generally remove the solid matters, kills bacteria and viruses, reduce the hardness of the water to suitable drinking conditions and performs various other activities in a stage-by-stage manner.

- The sensors installed in Water purifiers can detect the parameters like TDS, pH, Turbidity, Hardness, etc. before and after the water undergoes purification.
- The sensors can also detect whether the filter used for water purification needs replacement after certain period.

The government can also identify the water body (reservoir, river, lake, ground water, etc.) that feeds to the various water purifying system, from SAP Connected Goods.

Based on the data collected via SAP Connected Goods, government officials and other responsible institutions can take necessary actions to preserve the condition of drinking water, preventing it from further contamination like stopping effluents from industries, plastic contamination etc. and probably, make the drinking water suitable for consumption.
PERSONA:

Jay is a research analyst at the Institute of Water Conservation.

He has been performing research on ways to preserve the drinking water suitability for many years and won many laurels for his diligent duty.

Current Responsibility:

- Jay has been assigned the task of collecting drinking water samples from certain house-hold across various regions.

- This task has been initiated by the National Ministry of Water who want to sample the data and provide suitable drinking water to the public.

Pain points:

- This is a humungous task for Jay to perform the activity as he has to liaise with various local authorities in every region and reach out for their help to collect water samples.

- All the water samples have to be labelled with attributes like House address from where the water sample has been collected, region, Water Supplier, etc.

- Then, the water samples have to be brought from the various regions to the Water Sampling laboratory and each must be tested for the parameters like TDS, pH, Turbidity, Hardness, etc.

- This data has to be submitted to the National Ministry of Water.

Using SAP Connected Goods:

Jay has worked out with leading scientists and Water purifier manufacturers to deploy sensors in the Water purifiers that detects the Water suitability parameters like TDS, pH, Turbidity, Hardness, etc. before and after Water undergoes purification.

This data from sensors installed in Water purifiers can be collected in SAP Connected Goods on daily basis or real-time. Apart from the drinking water suitability parameters, the average amount of drinking water consumed per day in each household can also be calculated. All these statistics lead to effectively managing the Drinking Water residing in various bodies’ reservoirs, lake, ground water, etc.
As Water Research Analyst, I need a way to monitor the Drinking Water suitability parameters (TDS, pH, Turbidity, Hardness, etc.) so that I can provide the relevant data to the Institute and Water Ministry for controlling and preserving the Water from further contamination and in turn, provide clean, contamination-free drinking water to every household.
**USER EXPERIENCE JOURNEY:**

<table>
<thead>
<tr>
<th>ACTIONS</th>
<th>Jay reaches out to local authorities to collect Water Samples from Various Households.</th>
<th>Local authority person identifies the houses from where Water samples to be collected &amp; asks permission.</th>
<th>Local authority person goes to identified houses to collect Water before purifying process.</th>
<th>Local authority person labels the Water samples collected with the attributes and Water Source.</th>
<th>Local authority person sends the samples to Water Testing Laboratory.</th>
<th>Jay tests the various Water samples collected and shares the data with National Ministry.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINDSET</td>
<td>“Let me reach out to various local authorities.”</td>
<td>“Make a call to this house that I will come to collect Water Sample.”</td>
<td>“Ah, drive to these houses.”</td>
<td>“Let me collect the water sample from your home.”</td>
<td>“Alas, my work is completed”</td>
<td>“Let me test each of these samples.”</td>
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<td></td>
<td>“Will they understand?”</td>
<td></td>
<td></td>
<td>“Label them.”</td>
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<td>“Send the report to Ministry.”</td>
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<tr>
<td>FEELING</td>
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<tr>
<td>TOUCH POINTS</td>
<td>• E-mail.   • Telephone.     • Fax.</td>
<td>• E-mail.   • Telephone.</td>
<td>• Water Purifier</td>
<td>• Plastic Bag Container.   • Labels.</td>
<td>• Logistics.</td>
<td>• Testing Equipment.   • E-mail.     • Telephone.     • Fax.</td>
</tr>
</tbody>
</table>
**PROTOTYPE:**

BUILD Link:
https://standard.build.me/prototype-editors/api/public/v1/snapshots/d3b7d8a99087cca50e1673b7/artifacts/latest/index.html#/launch_page

Step 1:
Click on the IoT application for ‘Smart Drinking Water Health Monitor’. The number of connected units is displayed in the Launch Page. In this case, the number of connected Water Purifiers is 6.

![Image of 6 Units](image)

Step 2:
The next page shows the worklist containing the summary data of Connected Water Purifiers. The status of Filter inside Water Purifier is displayed. If the Filter status is ‘Bad’, then it needs replacing. Based on the monitoring, action can be taken to replace the filter. Also, the water suitability before purifying is shown as ‘DRINKABLE’ or ‘NON-DRINKABLE’, which will help for Water Ministry.

![Image of Worklist](image)
Step 3:

By clicking on ‘Equipment Number’, the next page shows the detailed information of Water suitability parameters (pH, TDS, etc.) for past 10 days per screenshot below:
Step 4:

Click on button ‘Properties before purification’ to check the properties and water suitability before purification per below: