Instrument Toolkit Program Overview

The Instrument Toolkit Program has been created to support the development of high quality monitoring devices based on commonly available hardware and utilizing VDAB dataflow programming and customized nodes for instrument construction.

While appropriate for building low-cost monitoring instruments and stations, some of the capabilities would enhance the performance of higher-cost commercially built stations.

## Enhanced Value

Incorporating VDAB and elements of the toolkit provides the following benefits for all instruments.

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| --- | --- |
| Value Area | Details |
| Remote Management and Control | VDAB provides complete control and management of the monitoring system which is easily customized with flows. |
| Integrated and Flexible Alerting | VDAB provides significantly more flexibility and capability with regards to both detecting alert conditions and providing notification on alert conditions. |
| Immediate real-time data propagation | VDAB includes the ability to propagate data to both a) other VDAB servers like GLDW and b) to key IoT data repositories like AWS and AT&T’s M2X |
| Irrefutable Event Tracking | By include VDAB processing in the instrument itself, irrefutable evidence regarding that data is maintained. |

# Value Emphasis by Group

While the Instrument Toolkit with VDAB provides significant value for all environmental monitoring systems and stations, specific values would likely be most important to specific users.

|  |  |  |
| --- | --- | --- |
| Target | How the use it. | Key Value |
| University/Research programs | Develop a customized instrument or station based on the Instrument Toolkit | * Provide a custom instrument at a **fraction of the cost** of assembling all commercial components. |
| Instrument Assemblers  Limnotech) | Adding a small system (pi3) to their assembled instrument which would primarily be built with commercial components. | * Enhanced Management Capabilities * Enhanced diagnostic capabilities. * Integrated alerting * Irrefutable data tracking. * Support remote software update. |
| Instrument Product Companies  (YSI) | Incorporating VDAB natively in the instrument. | * **Eliminate** most of their internal **software development cost**. * Enhances the flexibility of their customers to modify behaviors and add features by customizing flows. * Enhanced Management Capabilities * Enhanced diagnostic capabilities. * Integrated alerting * Irrefutable data tracking. |

# APPENDIX NOTES

* Monitoring station are built with inexpensive OTS standard processors
* VDAB – Visual Dataflow Application Builder includes integrated automated data propagation from the station to a VDAB cloud server.
* Key VDAB standard processing nodes
  + Digital inputs and outputs
  + Serial input and output
  + New VDAB instrument nodes
  + Calibration
  + Titration Controller
  + Liquid control commands.
  + Trend alerts.
* Flows can be build to detect and send alerts
  + Electrode fouling
  + Reduced precision
  + Battery issues
  + Other component diagnosis.
  + Integrated GPS data for data events from moving sources.