CERN Accelerator Controls WRAP GUI Platform

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WRAP

- The platforms aim to build to build on the success of an old Java-Swing-based platform (aka **Inspector**)
  - Reduce the number of full-fledged specific applications
  - Facilitate the development thanks to no-code/low-code approach (domain focus)
  - Reduce the exposure to technology changes
- Web-based, available from anywhere (on CERN's network)
- Integrated with high-level services (InCA/LSA, NXCALS, etc.)
- High-level of customisation

WRAP Status

- We've come a long way since the early prototypes of 2021
  - Performance improvement with Web-socket and data decimation on the graph (see charting talk)
  - Support for SSVG (see synoptics talk)
  - Access rights and read-only mode
  - Introduced WRAP Variables for more flexible and generic applications
  - Mixed historical (archiver) and live data with Timing selector
  - Static meta-data support
      => all device-server types supported (enums, bit-fields, 2D array, etc.)
  - Data synchronisation for cycle-bound data
  - Continuous improvements in widgets & editor with many quality-of-life improvements e.g. auto-apply, user-defined default schemes
  - Desktop-app-like deployment in CERN's Control Centre (see packaging talk)

Type support in WRAP

	Data Type	Scalar	1D Array	2D Array
Label (Status Indicator)	Any	Yes	With Slicing	With Slicing
Progress Bar	Number	Yes	With Slicing	With Slicing
Numeric Set	Number	Yes	No	No
Data Grid	Any	Yes	Yes (with optional Slicing)	With Slicing
Chart	Number-like *	Yes (with history)	With Slicing	With Slicing
Array Graph	Number-like	No	Yes	With Slicing
Special Array Graph	Number	No	Yes	With Slicing
Waterfall	Number-like	No	Yes (with history)	With Slicing
Heatmap	Number-like	No	No	Yes
Bit Enum	Bit enum	Yes	With Slicing	With Slicing
SSVG	Any **	Yes	With Slicing	With Slicing
Label	Data Sources cannot be assigned			
Date/Time				

For 1D and 2D arrays, "Yes" also includes optional sub-range

* Number-like: Number, Boolean, Enum

** As specified by the uploaded SSVG

WRAP – Future plans

- 2023
  - Focus on extended **Set** operations
    - Should dramatically increase the use-cases coverage
- 2024 and later
  - Scripting (simple DSL 'a la' Grafana) for simple UI logic
  - API access to facilitate migration
  - Assist with migration and iterate on smaller features (customisation, additional options, etc…)
  - Iterate again on performance (charting, communication

Aspects not covered

- Simple business logic:
    - WRAP does not provide an easy way to call advanced business logic
    - Inspector provides a simple local integration with Python
    - Other solutions (virtual devices, settings management system) are either partial or not as simple as desired

- Access from outside CERN and mobile view
    - Aiming for a complete solution, rather than just screenshots (as per Inspector)
    - More complex than it seems & requires IT security approval
    - Synergies with ongoing Kubernetes for Controls project
    - ➔ should be possible from 2nd half of 2024, will be behind 2FA SSO