

Adopting NICOS at SINQ

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Introduction

- SINQ used SICS¹ as experiment control software since 1996
- Collaboration with ANSTO on SICS
- After lengthy discussion it became clear in 2019 that another refactoring of SICS would become a rewrite
- Decision to replace SICS by a combination of EPICS² and NICOS³
- Why NICOS?
 - Came out on top in ESS comparison
- Why EPICS?
 - PSI uses EPICS everywhere else: HIPA, SLS, SwissFEL
- Collaboration within PSI and with ESS

SICS Collaboration Experiences

- Watch your kernel!
 - We ended up with three different TCP/IP communication modules
 - This proved unfixable due to manpower constraints
- Insufficient resources beget technical debt
- Close and continuous communication needed

The Transition Process

- Extracted requirements from SICS
- Created EPICS level instrument simulations
- Developed NICOS code against these simulations
- Completed for 15 instruments
- Operational: 2021 6/2022 15 beam lines

From: SICS code to maintain by PSI

- 193635 LOC ANSII-C
- 12556 LOC Tcl
- 92683 LOC instrument configurations
- 260091 LOC Java GUI code
- Total: 558 965 LOC



TO: NICOS/EPICS code to maintain by PSI

- 6774 LOC EPICS ANSII-C, C++ code
- 13149 LOC EPICS configuration
- 20805 LOC NICOS python code
- 12957 LOC NICOS setup code
- Total: 53885 LOC

NICOS/EPICS Collaboration Experiences

- -90% LOC code to maintain alone
- There is always someone to ask with problems
- Code reviews and such: 3 times more development time
- The complexity induced through 15 unique beam lines with aging hardware stayed with PSI
- Collaboration problems when you partner is working at or beyond the burnout line

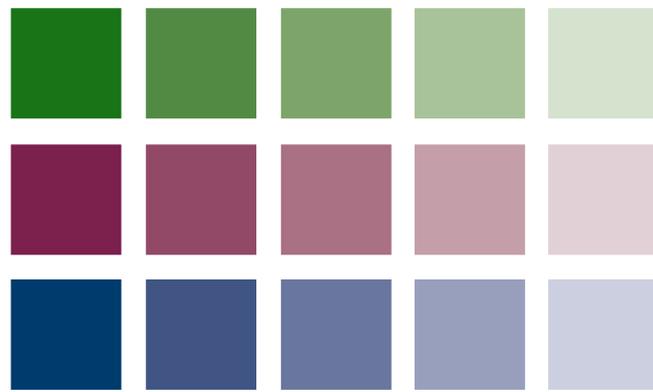
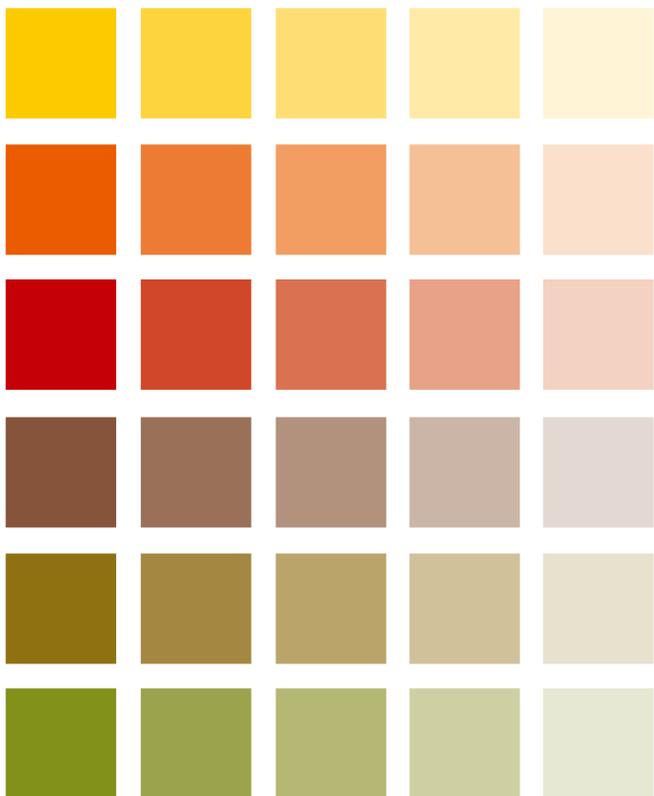
References

1. <http://Ins00.psi.ch/sics/design/sics.html>
2. <https://epics-controls.org>
3. <https://www.nicos-controls.org>

Grundfarben PSI



Wahlfarben Grafiken: 1. Wahl



Wahlfarben Grafiken: 2. Wahl

