THE READER COLLISION PROBLEM

DANIEL W. ENGELS, PH.D.

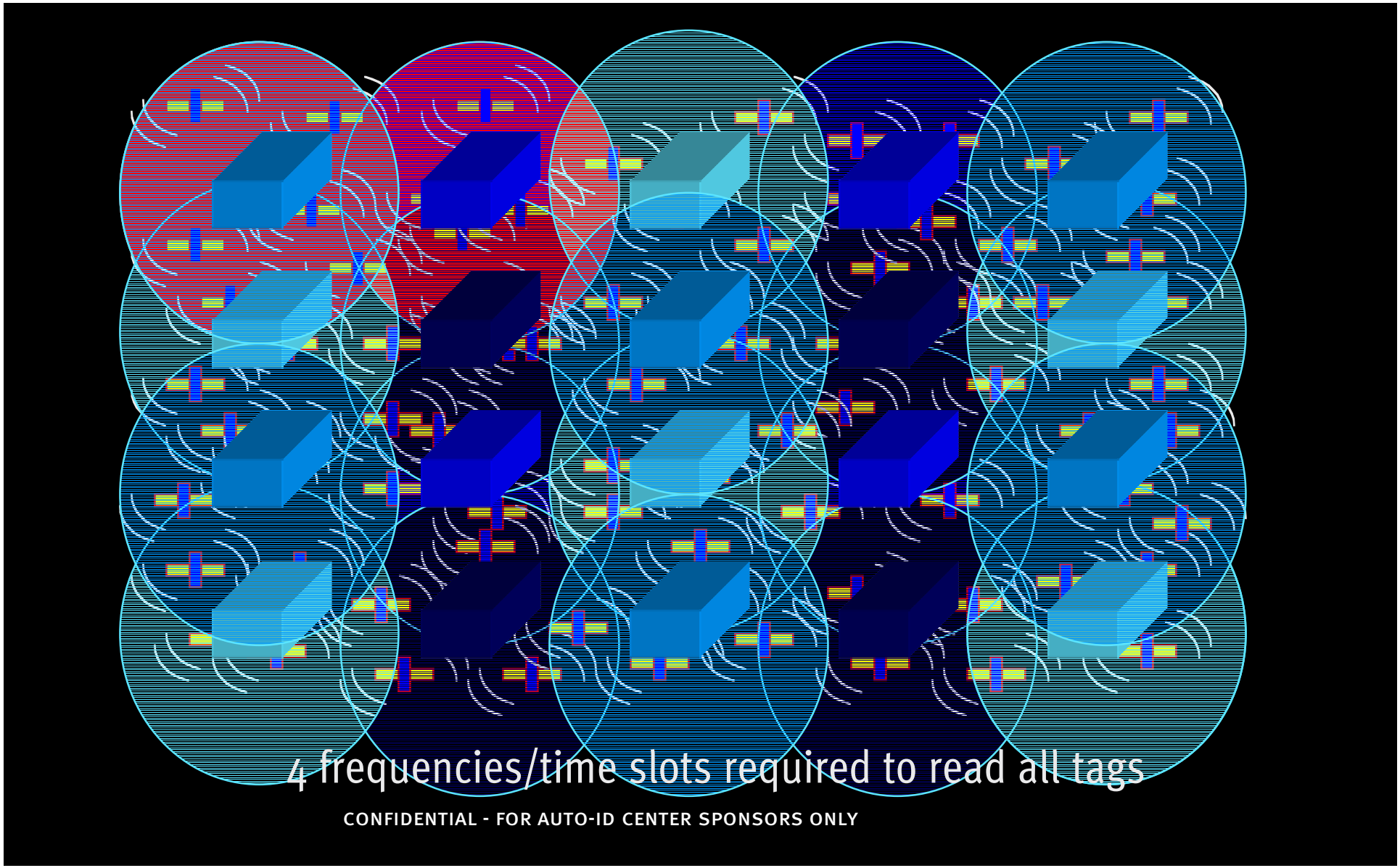
OVERVIEW

- Motivation
- Problem Definition
- Practical Cases
- Conclusions

CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

AUTO-ID CENTER

MOTIVATION



CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

AUTO-ID CENTER

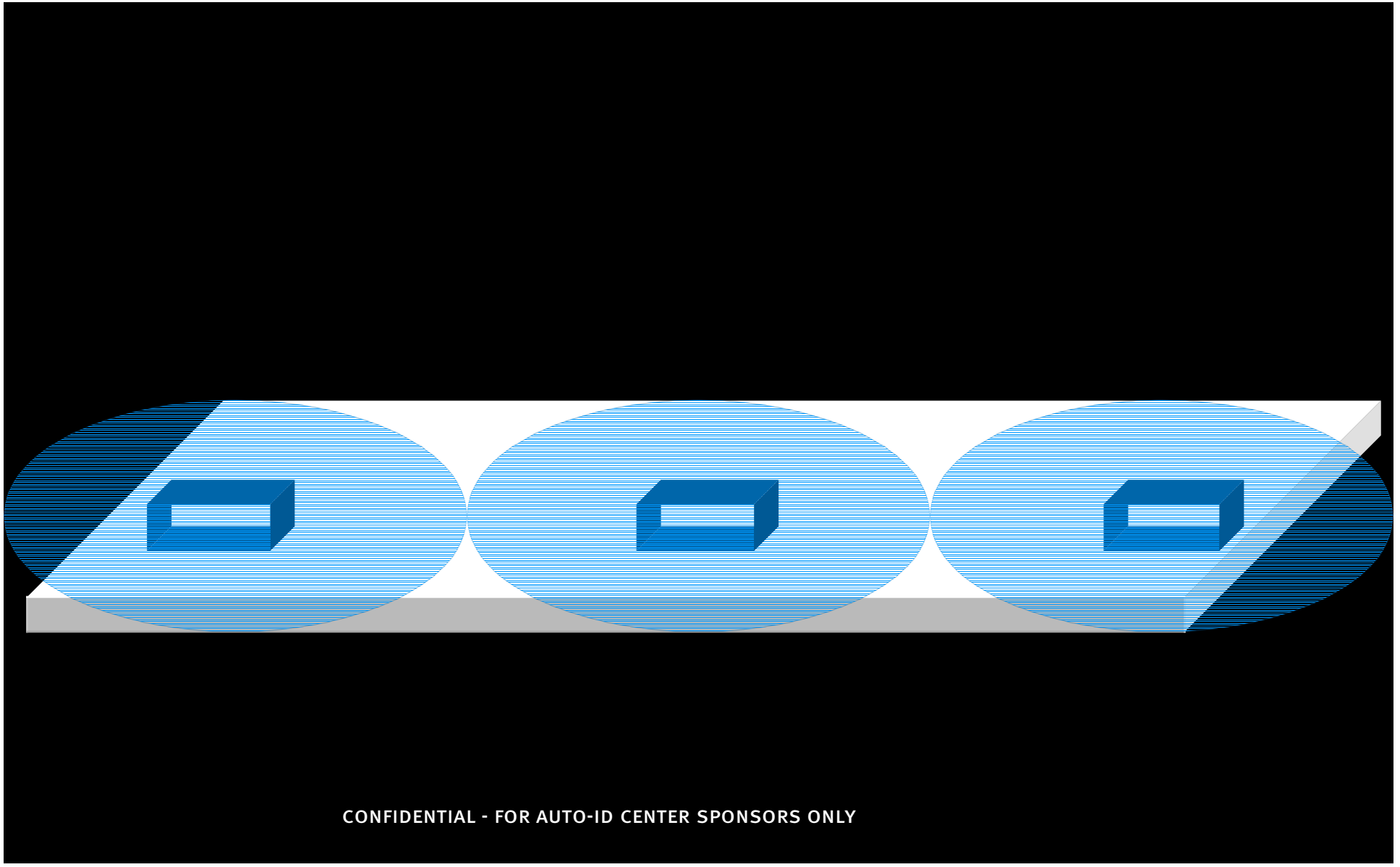
PROBLEM DEFINITION

- The problem of assigning frequencies over time to a set of readers such that the readers communicate with tags as often as required.

- The problem of making the readers read all of the tags.

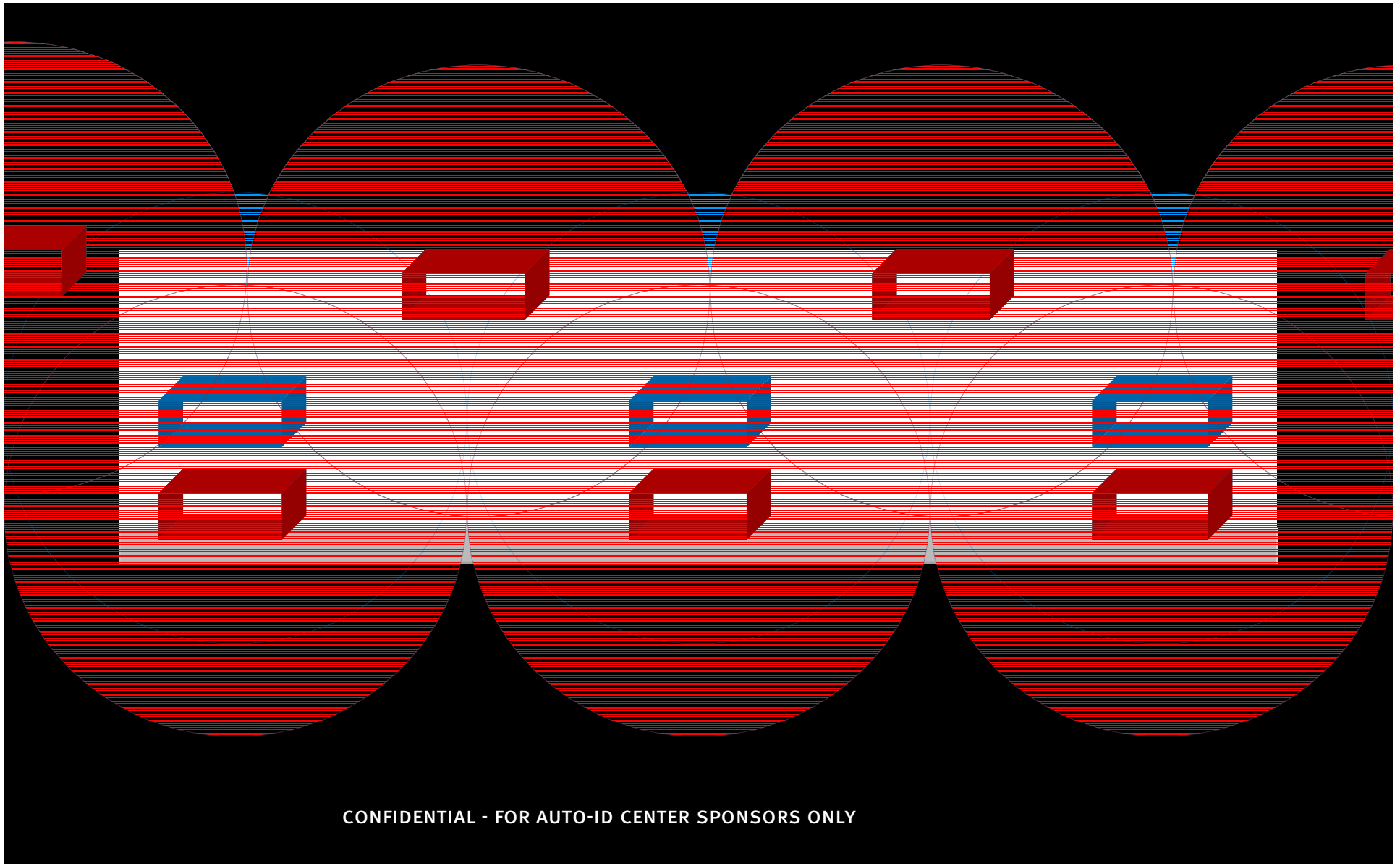
CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

SHELVING – GLOBAL CONTROL



CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

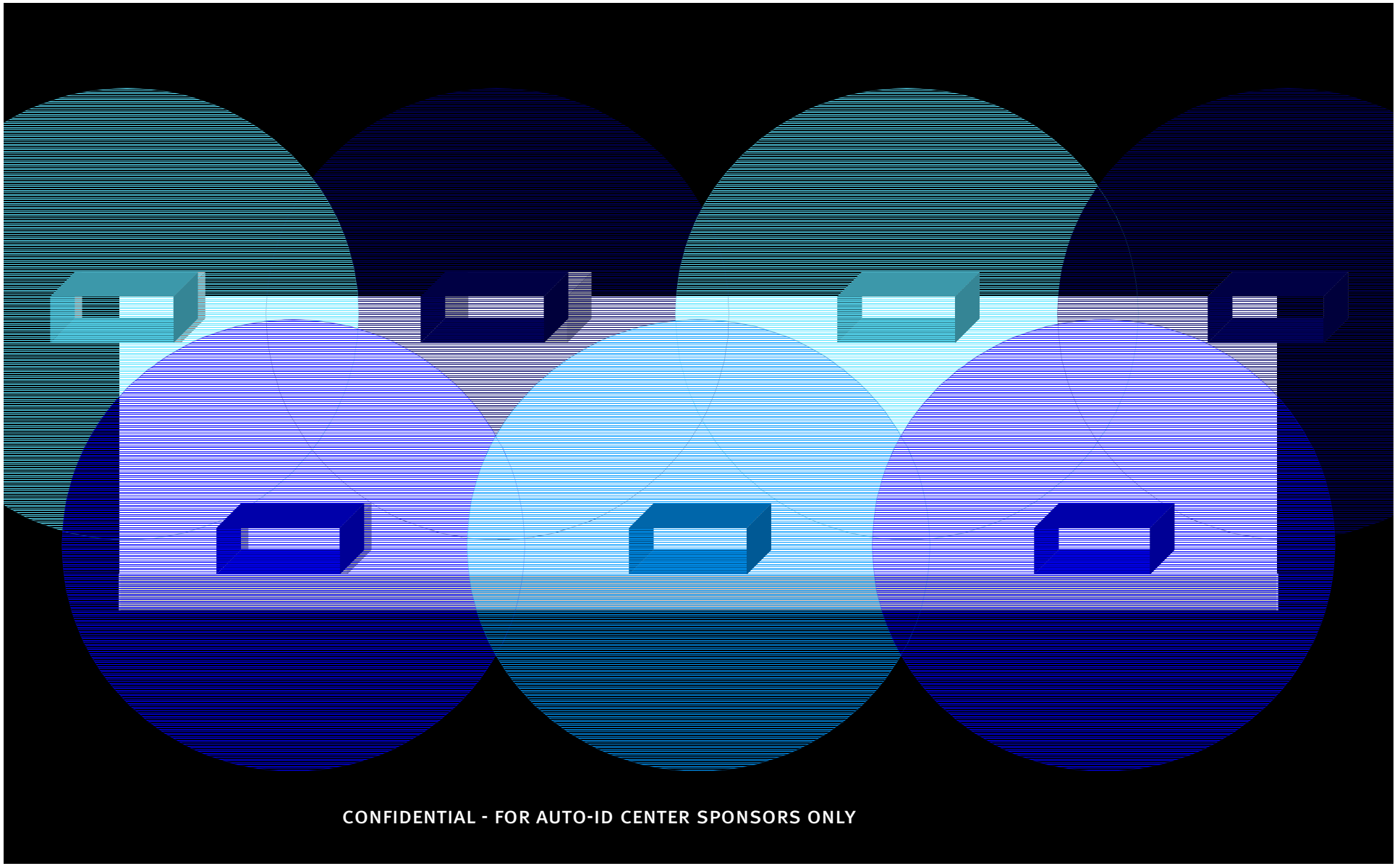
SHELVING – GLOBAL CONTROL



CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

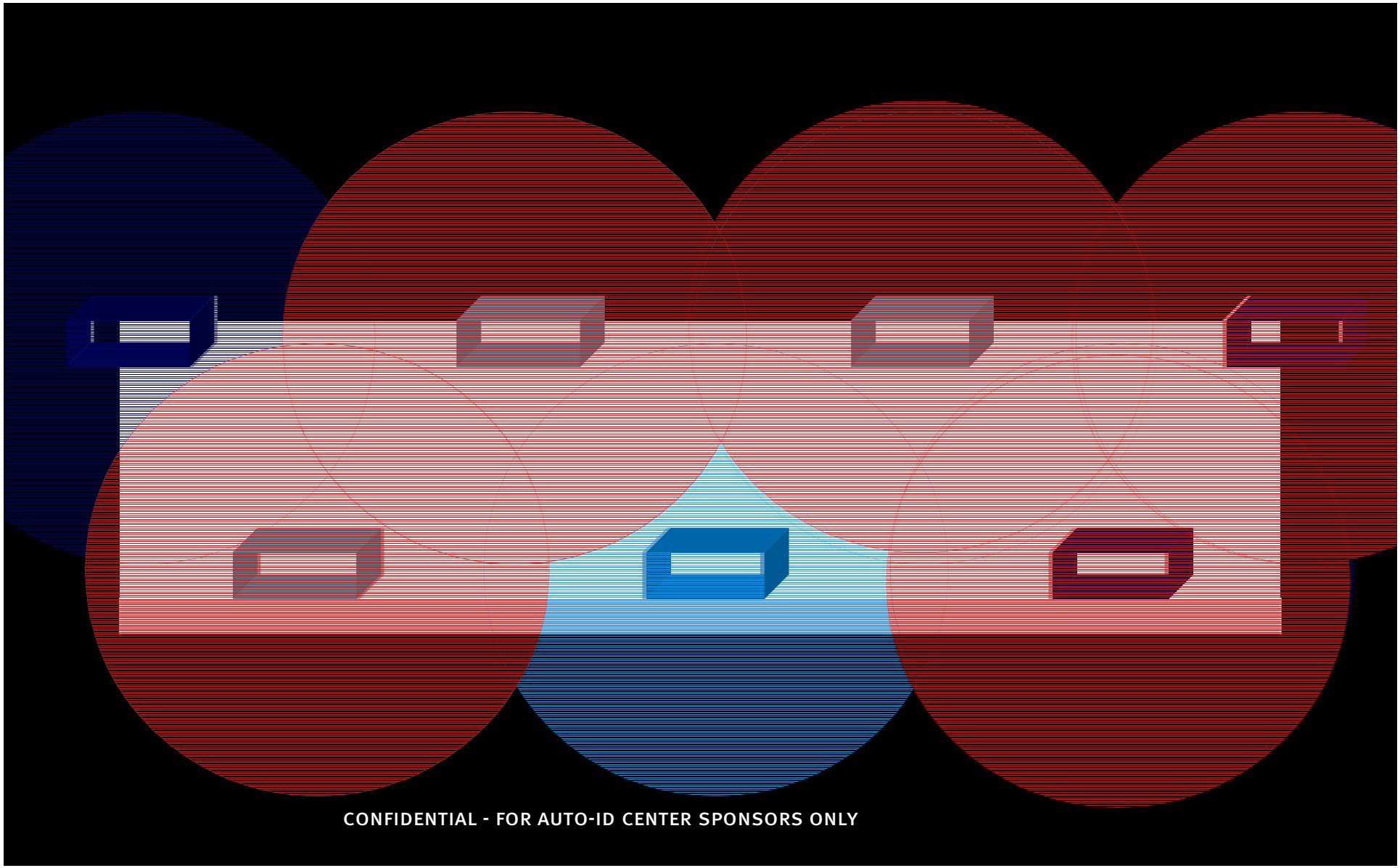
AUTO-ID CENTER

SHELVING – GLOBAL CONTROL



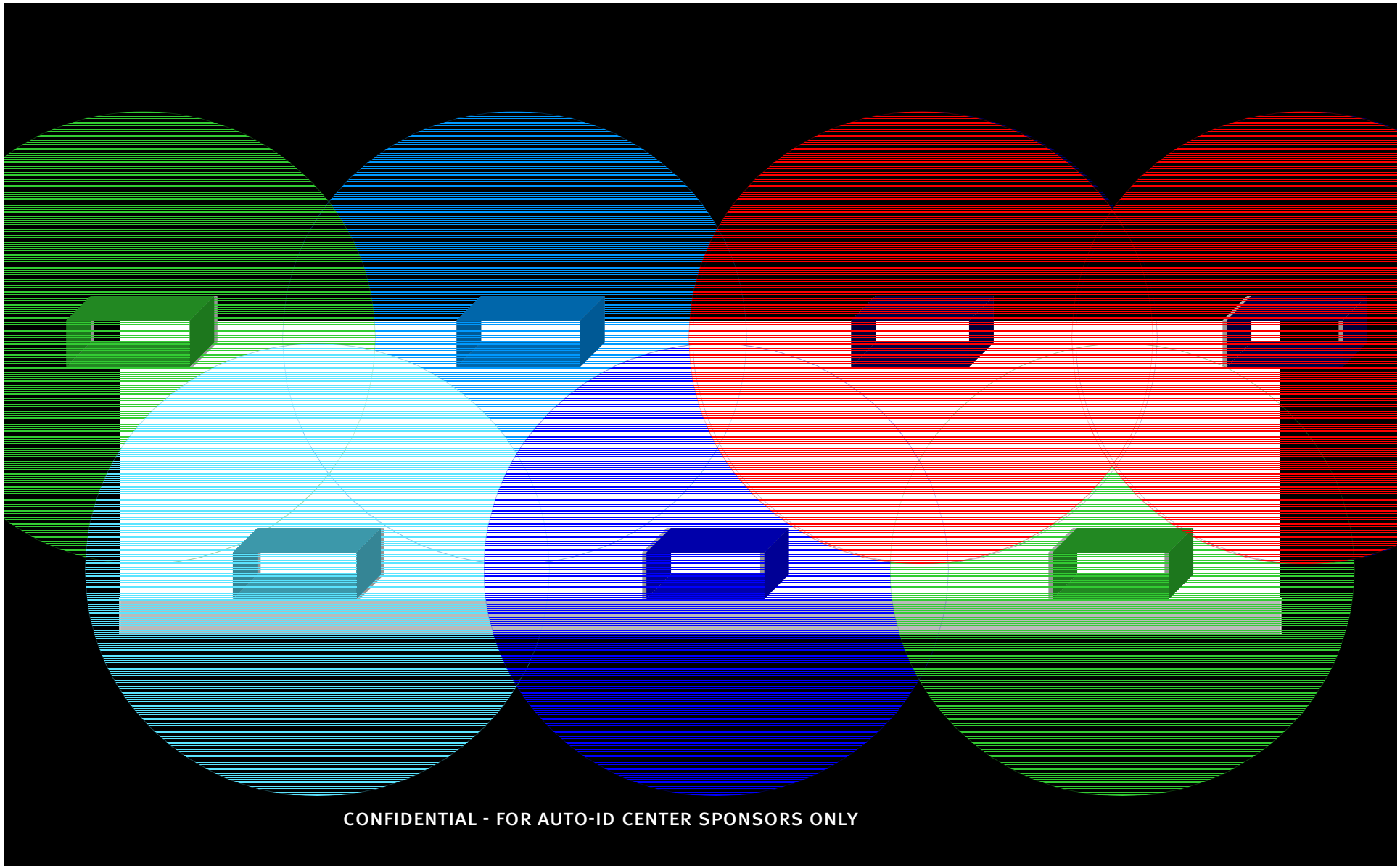
CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

SHELVING – DISTRIBUTED CONTROL



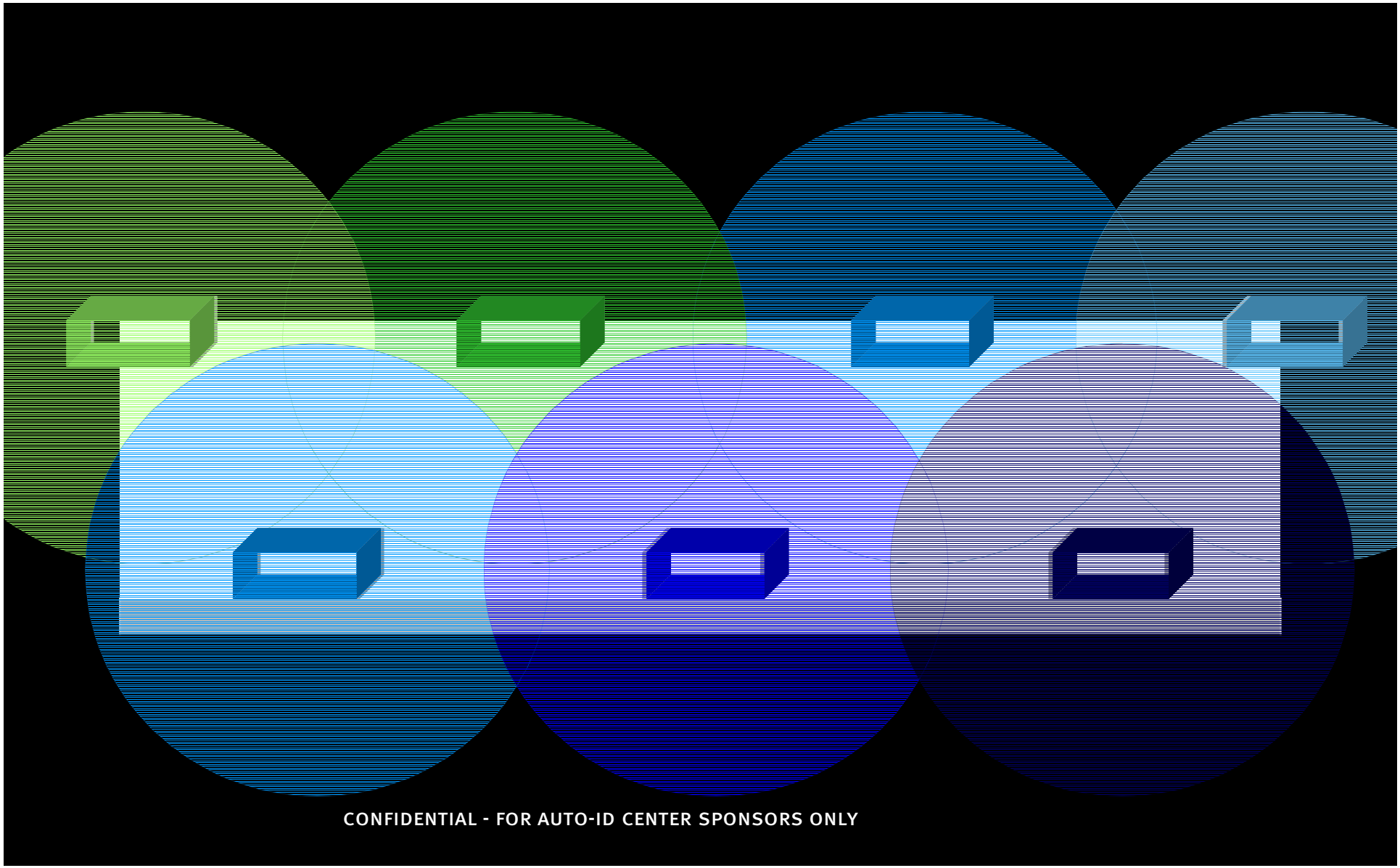
CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

SHELVING – DISTRIBUTED CONTROL



CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

SHELVING – DISTRIBUTED CONTROL



CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY

AUTO-ID CENTER

CONCLUSIONS

- Fewer collisions if readers do not have to read 24/7
- Many practical cases are solvable
- Simple algorithms will work for many practical cases

CONFIDENTIAL - FOR AUTO-ID CENTER SPONSORS ONLY