The Spiral2 Control System progress towards the commissioning phase

Irfu cea saclay

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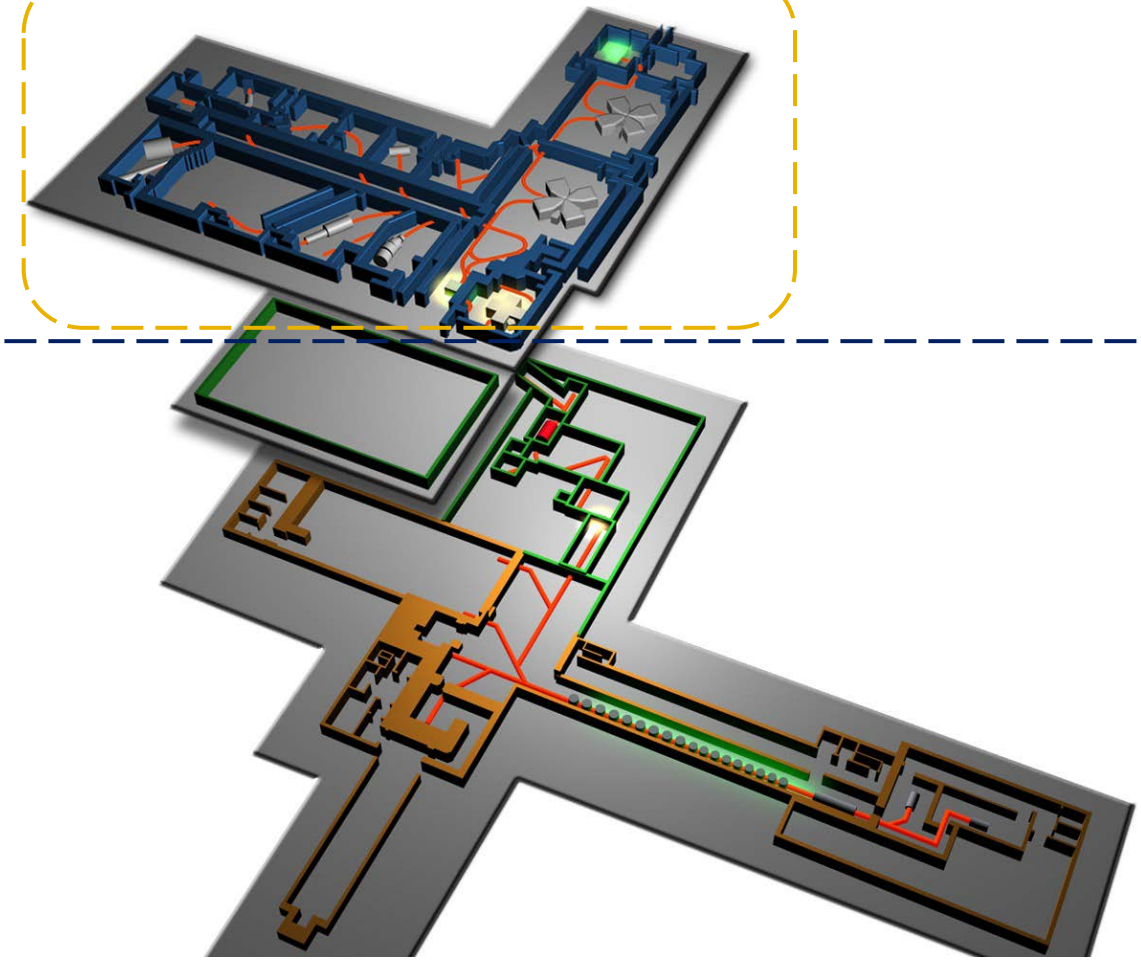
GANIL spiral2 laboratoire commun CEA/DSM CNRS/IN2P3

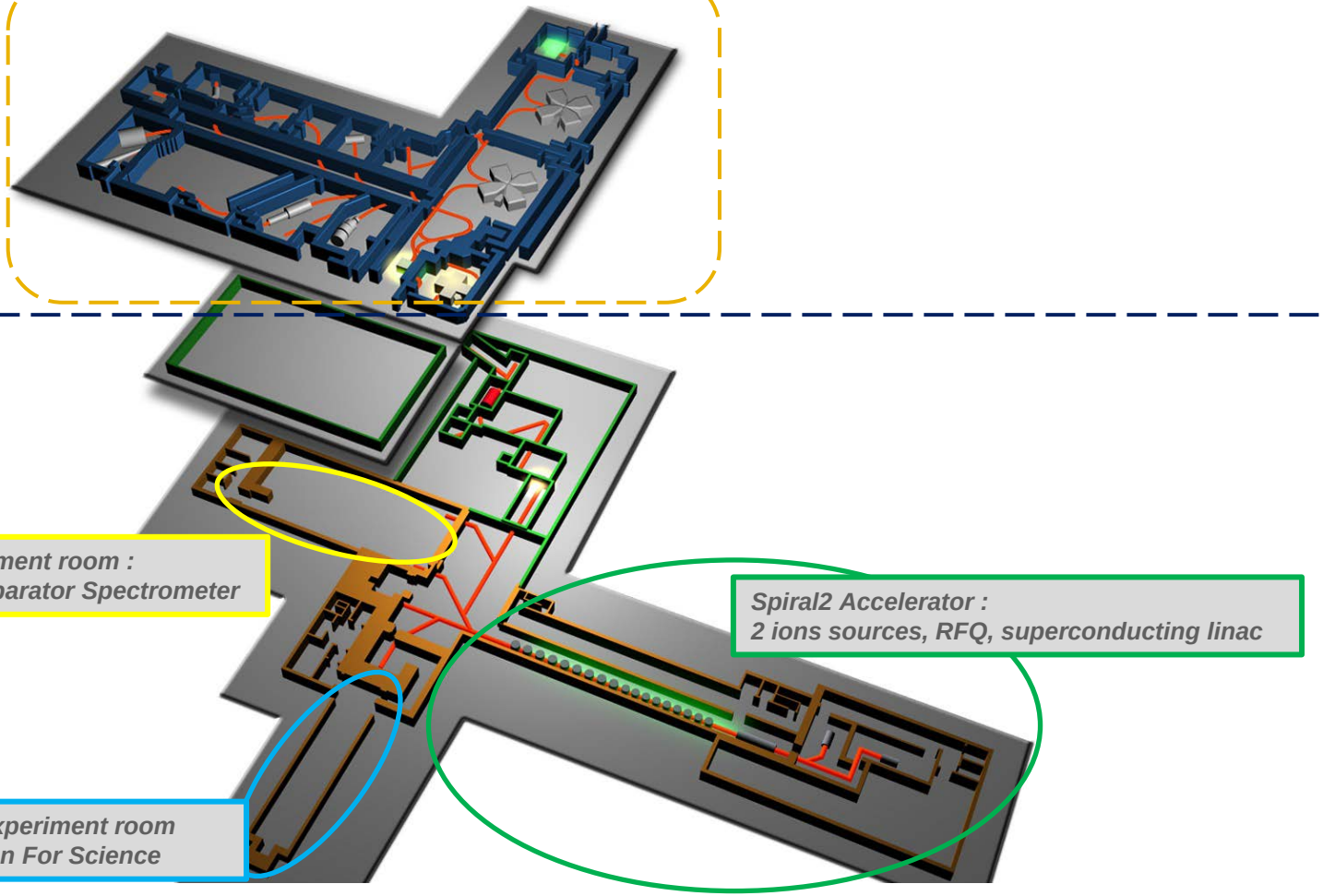
Outline

- Spiral2 : a new Rare Ion Beam facility
- Building Progress
- Control System Architecture
- Development Organization
- Control System Deliverables
- Development Status

Spiral2 : a new Rare Ion Beam facility

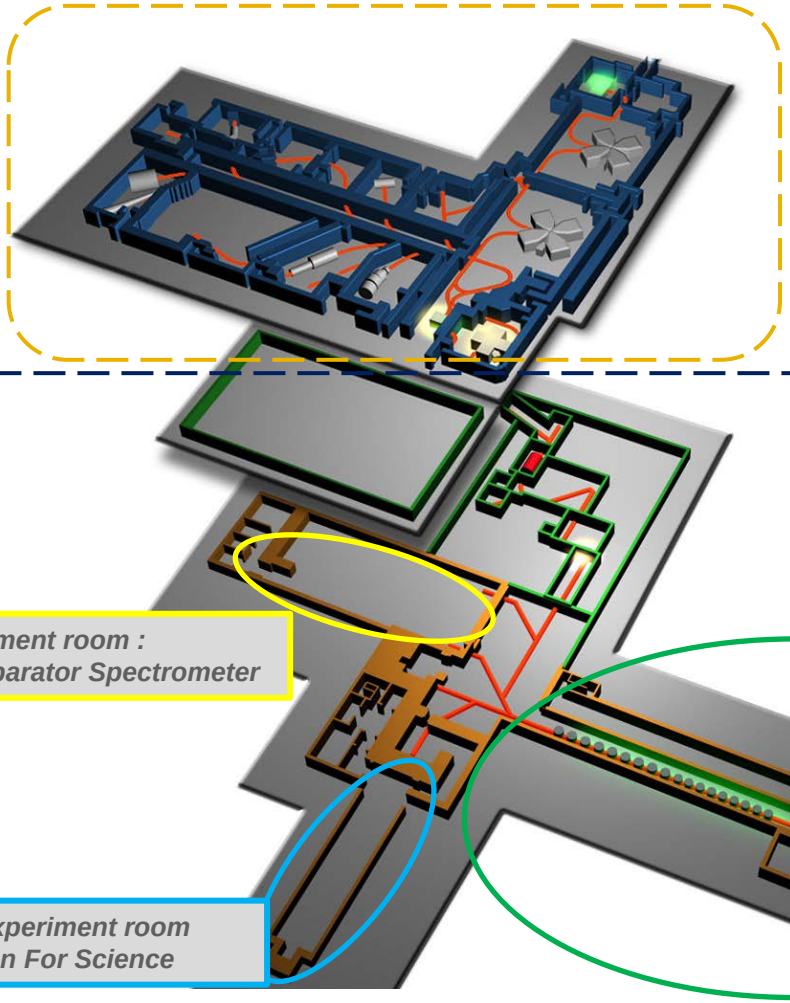


Spiral2 : a new Rare Ion Beam facility



Spiral2 : a new Rare Ion Beam facility

	Q/A	I (mA)	Energy (Mev/u)	CW max beam power (KW)
Protons	1/1	5	2 - 33	165
Deuterons	1/2	5	2 - 20	200
Ions	1/3	1	2 - 14.5	45



S3 experiment room :
Super Separator Spectrometer

Spiral2 Accelerator :
2 ions sources, RFQ, superconducting linac

NFS experiment room
Neutron For Science

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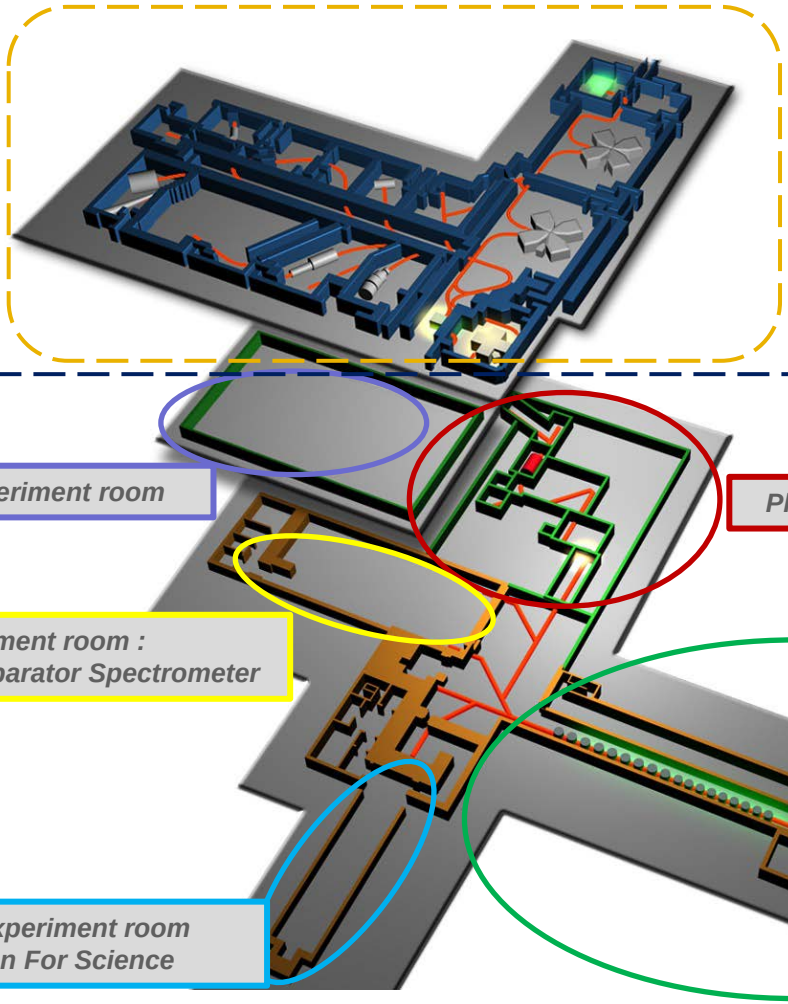


Building progress : From building to …

May 2011

Building progress : From building to …

May 2011

June 2012

Building progress : From building to …

May 2011

June 2012

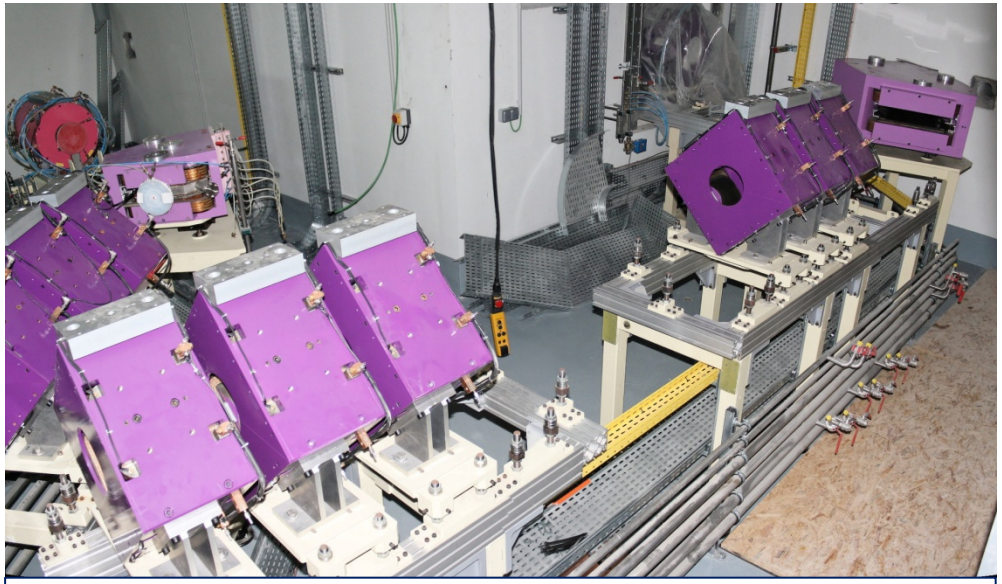
March 2013

Building progress : From building to …

Building progress : … process installation

- Process installation in parallel with the building

- Low Energy Beam lines installation started end-2012



July 2013:
mechanical frame and quadrupoles in place

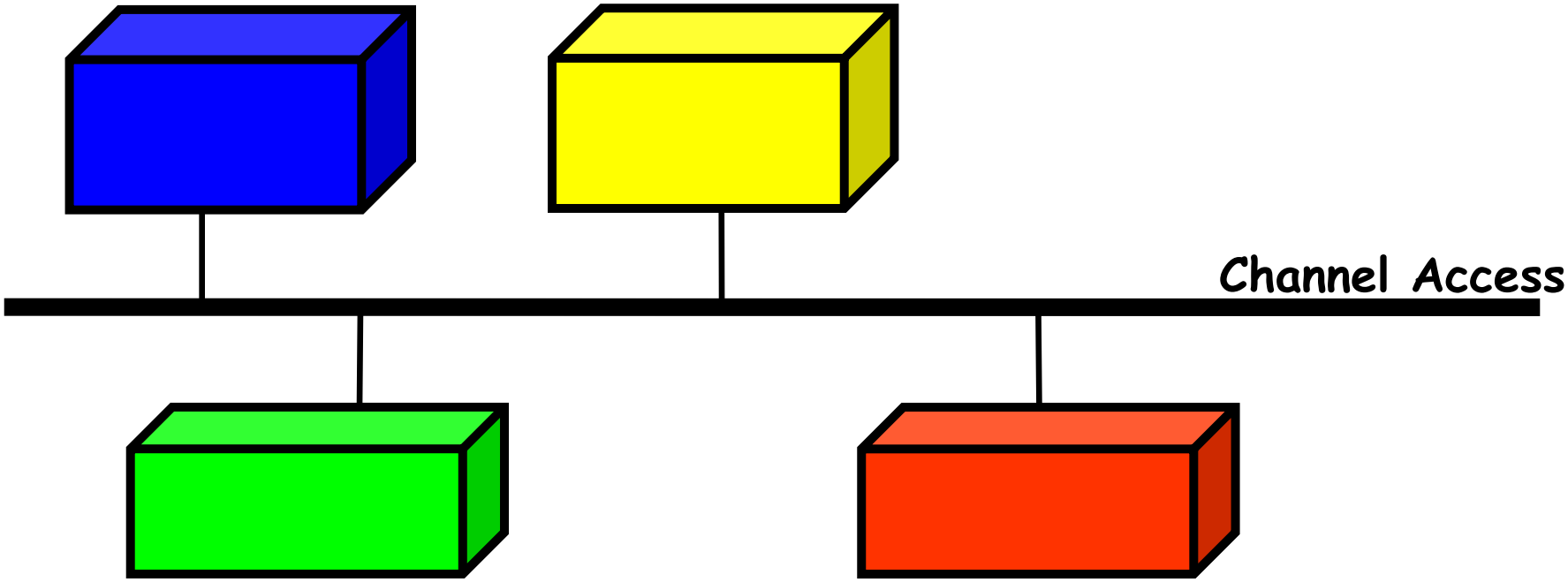
Building progress : … process installation

- Linac installation just started

July 2013: mechanical frame in place

cryomodules installed soon

Control System Architecture



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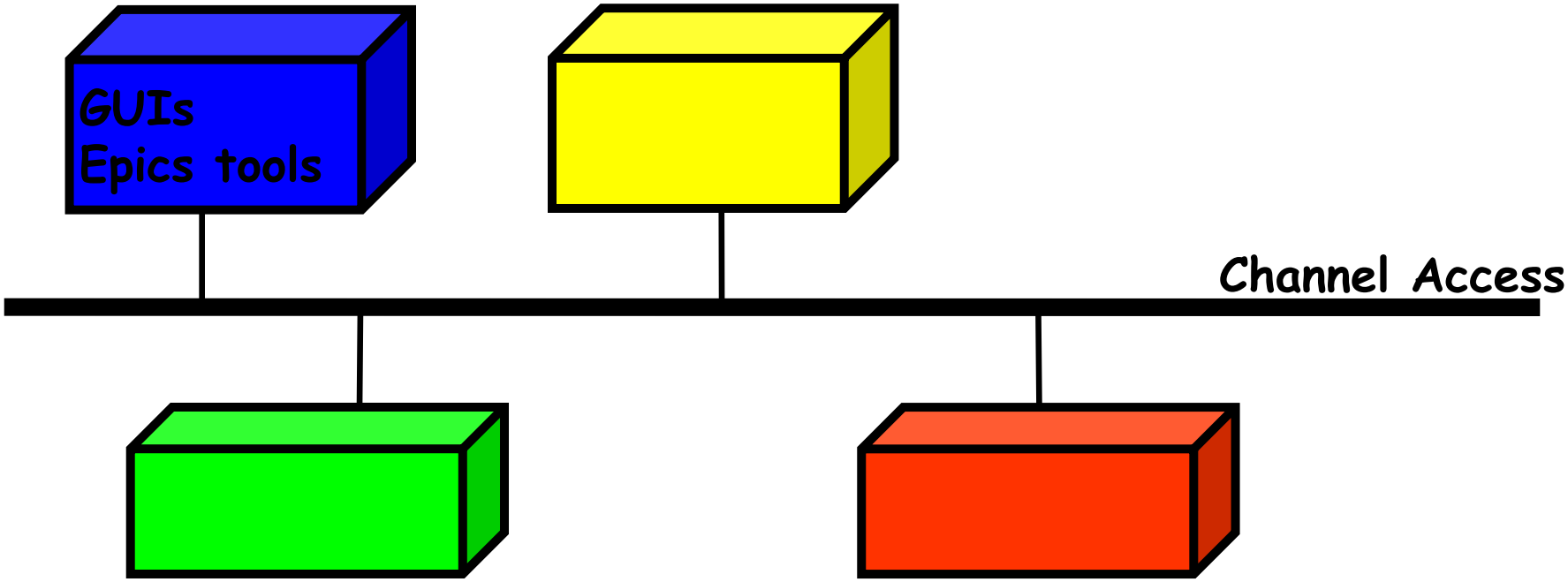

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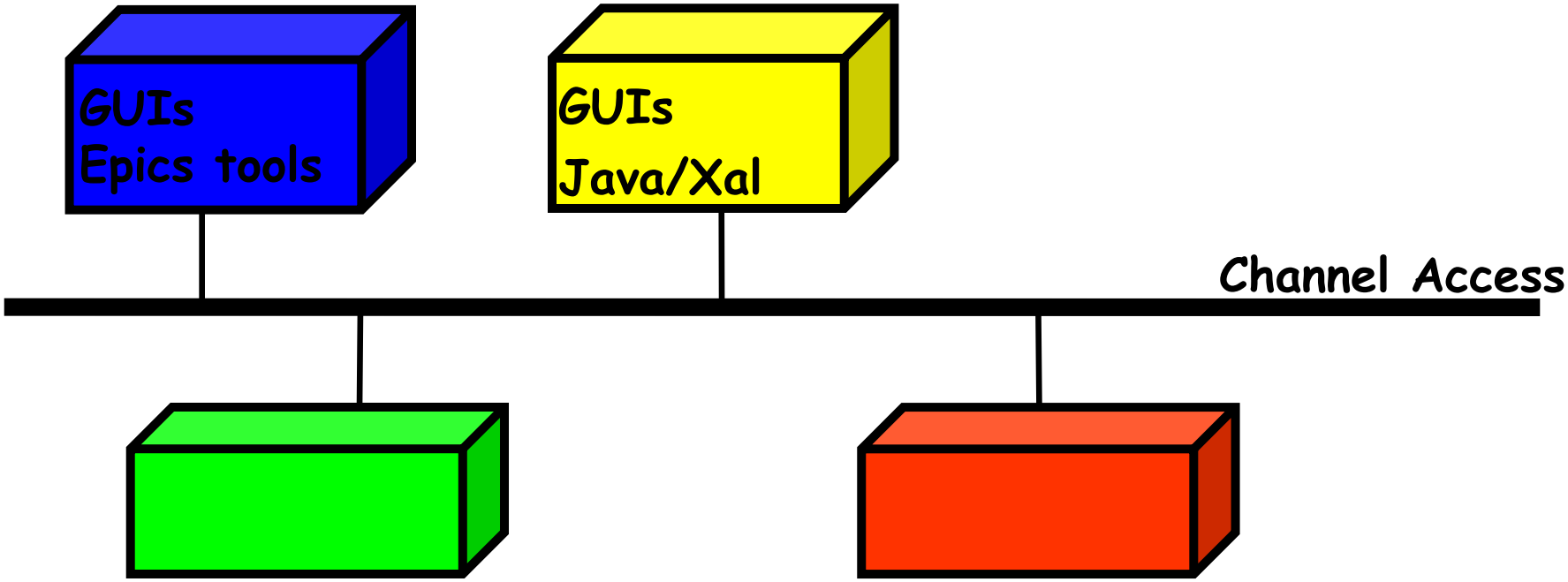

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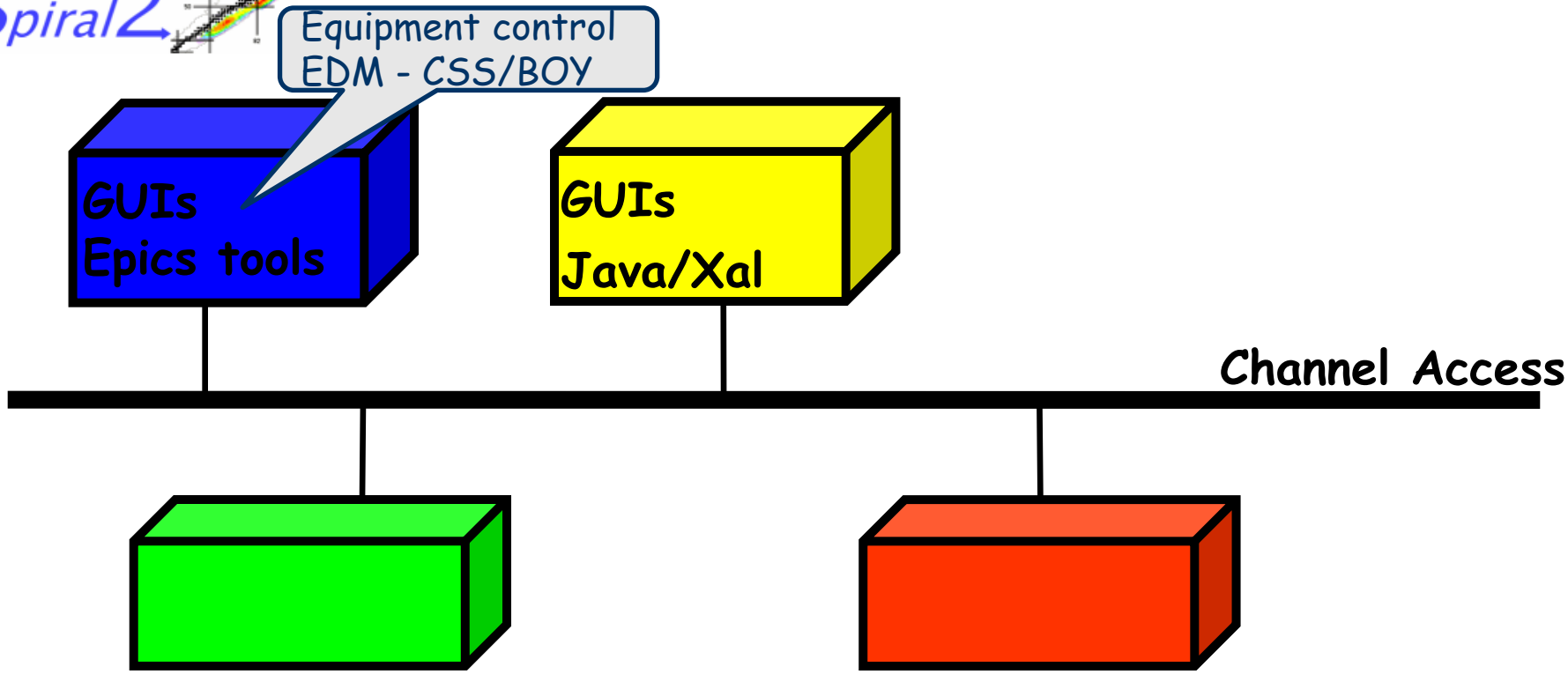

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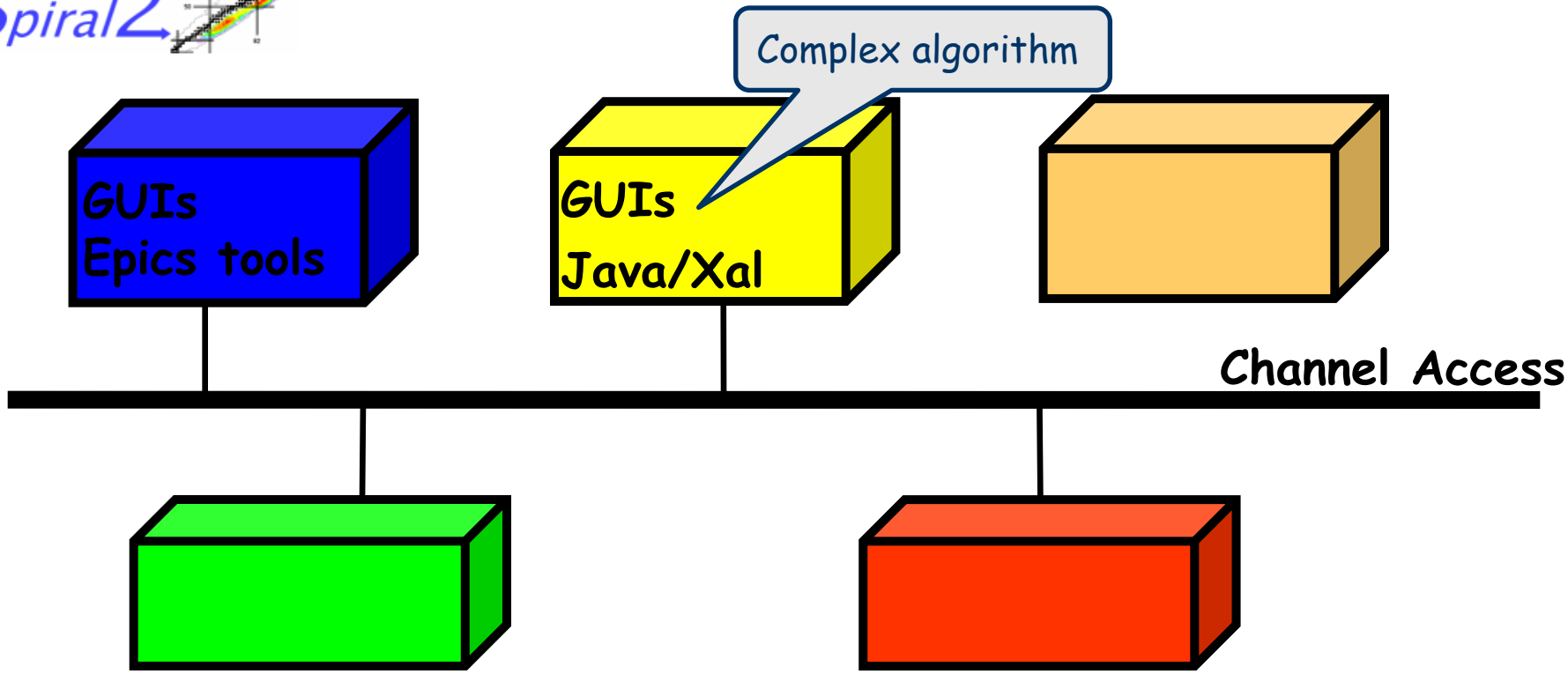

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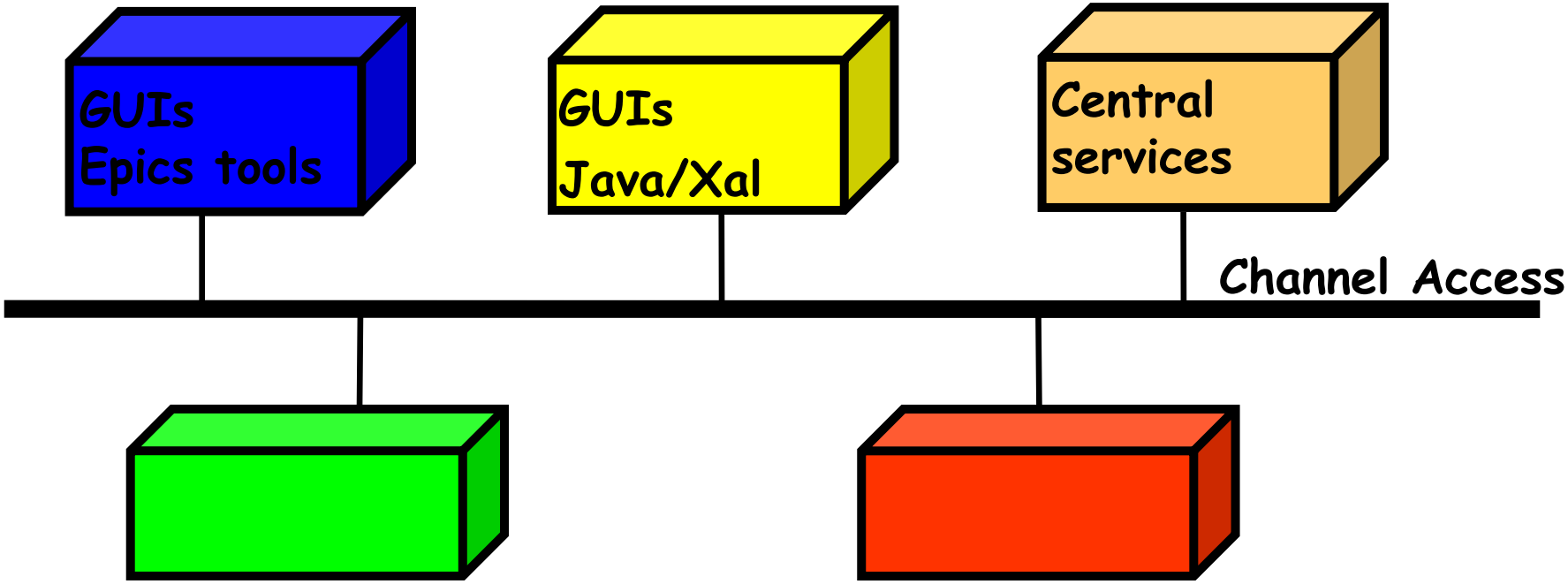

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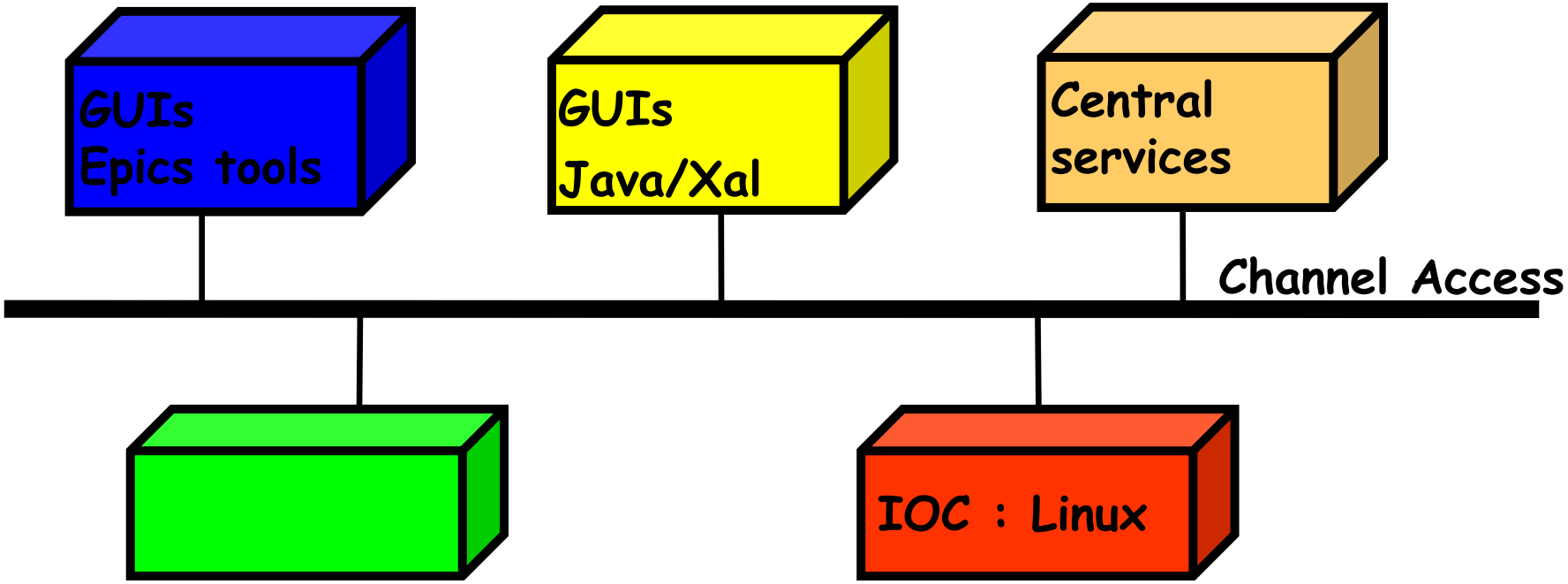

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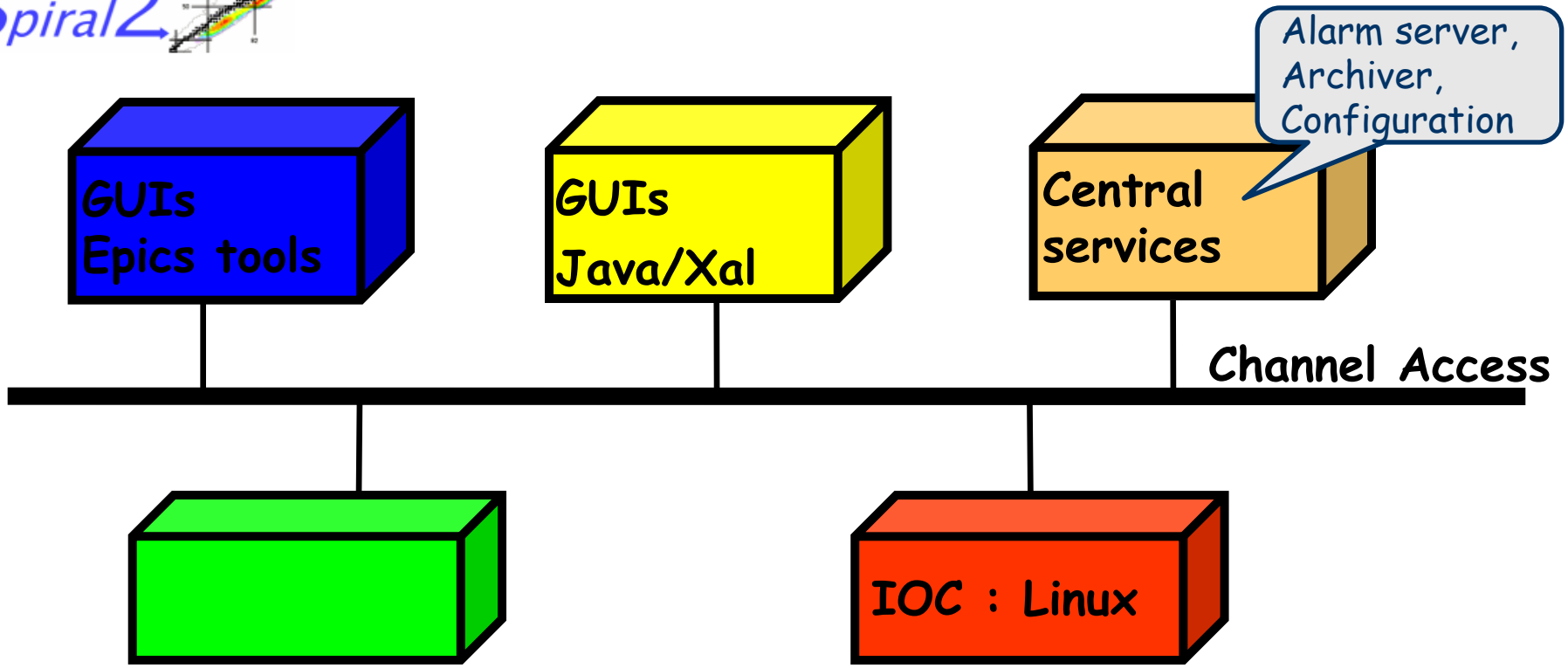

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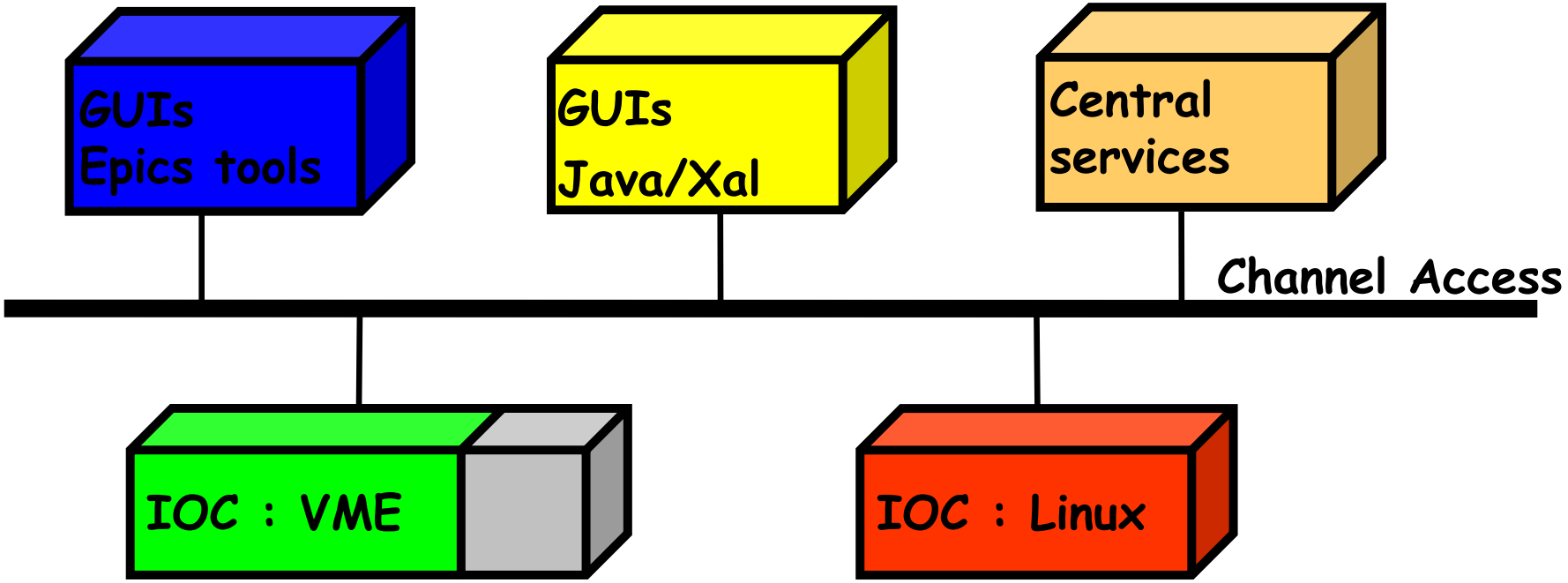

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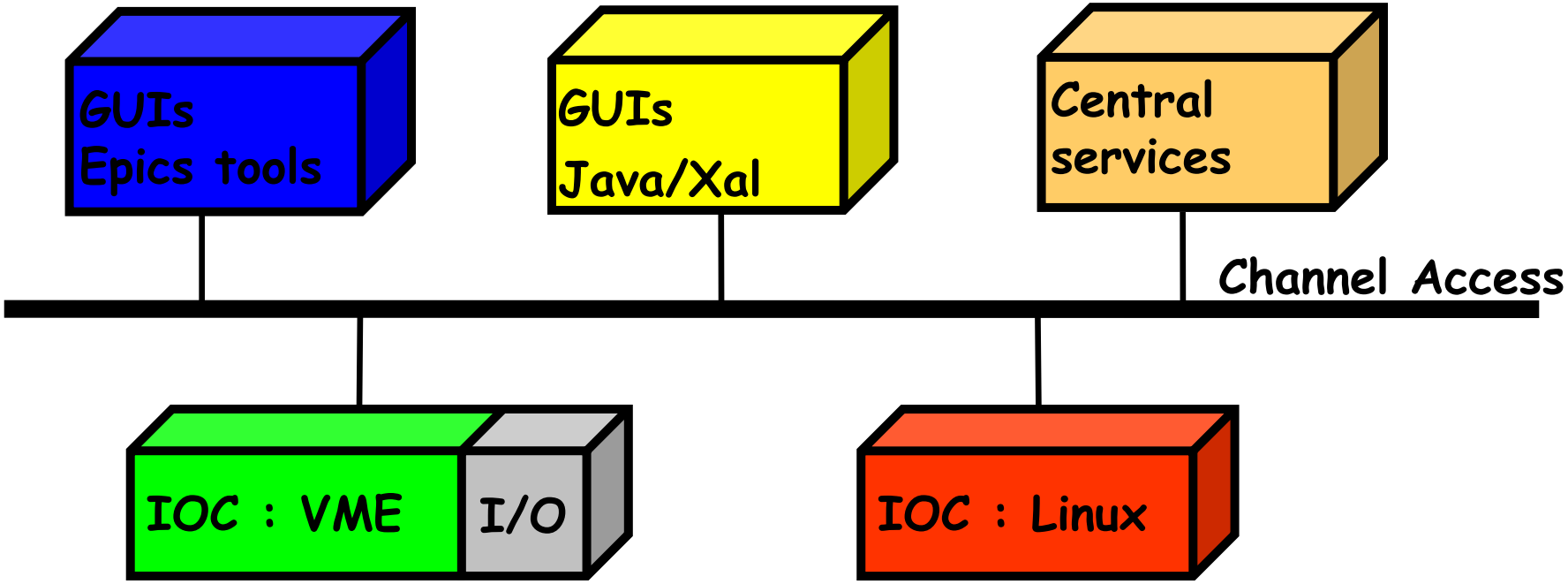

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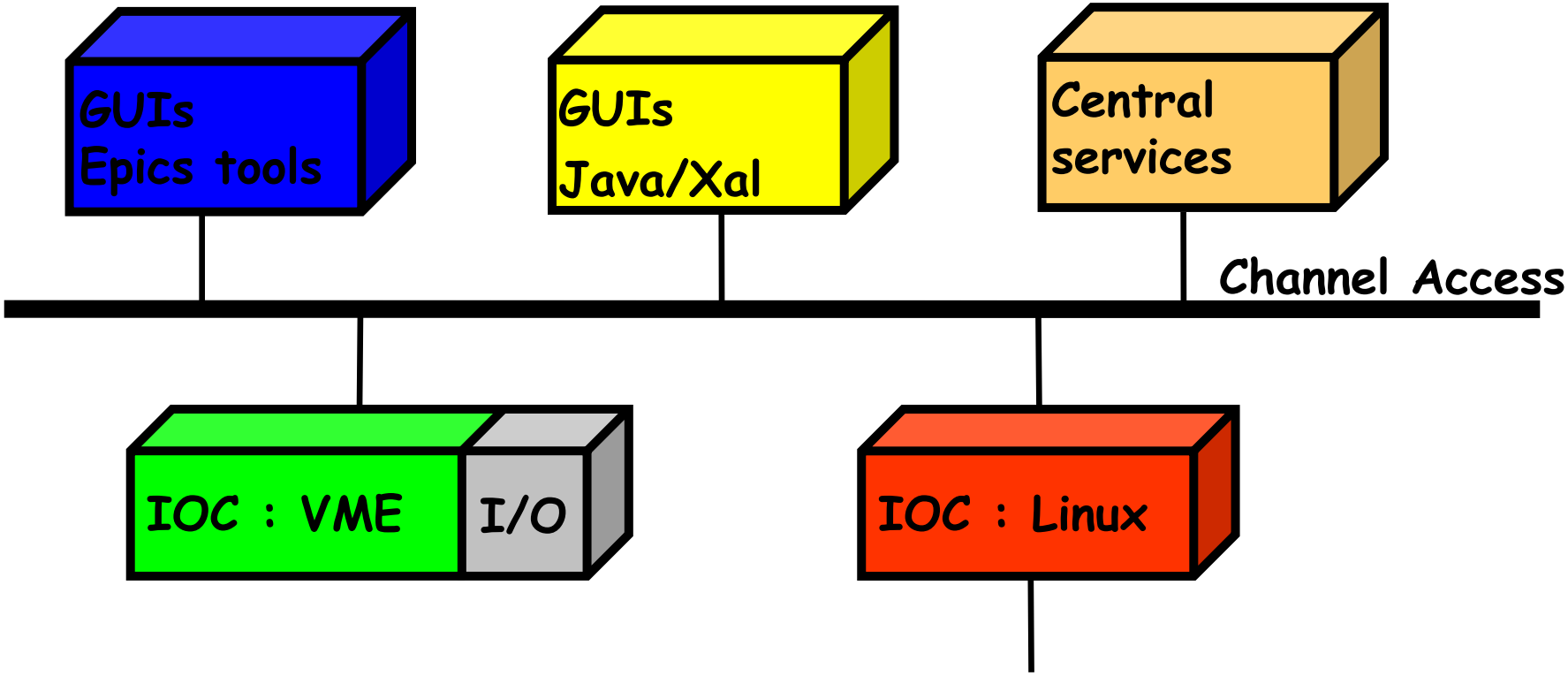

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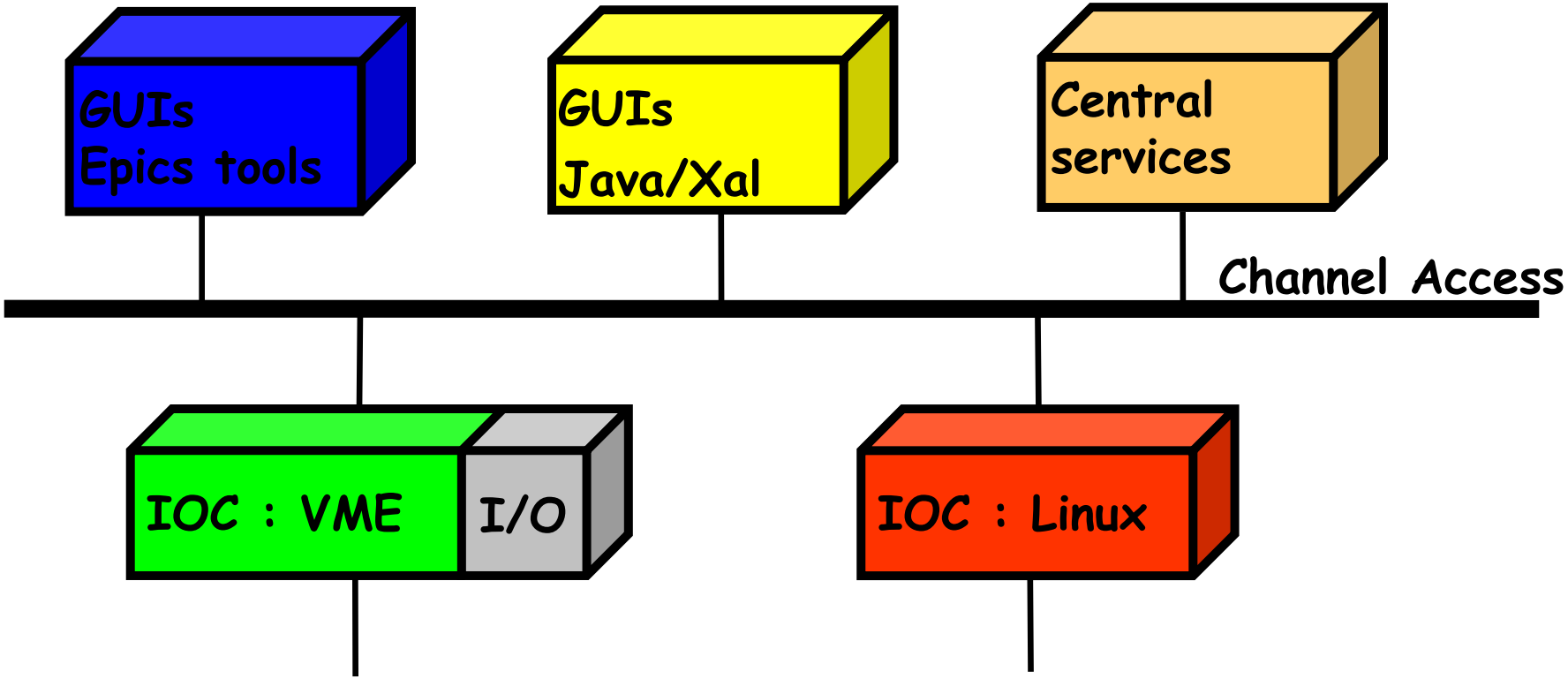

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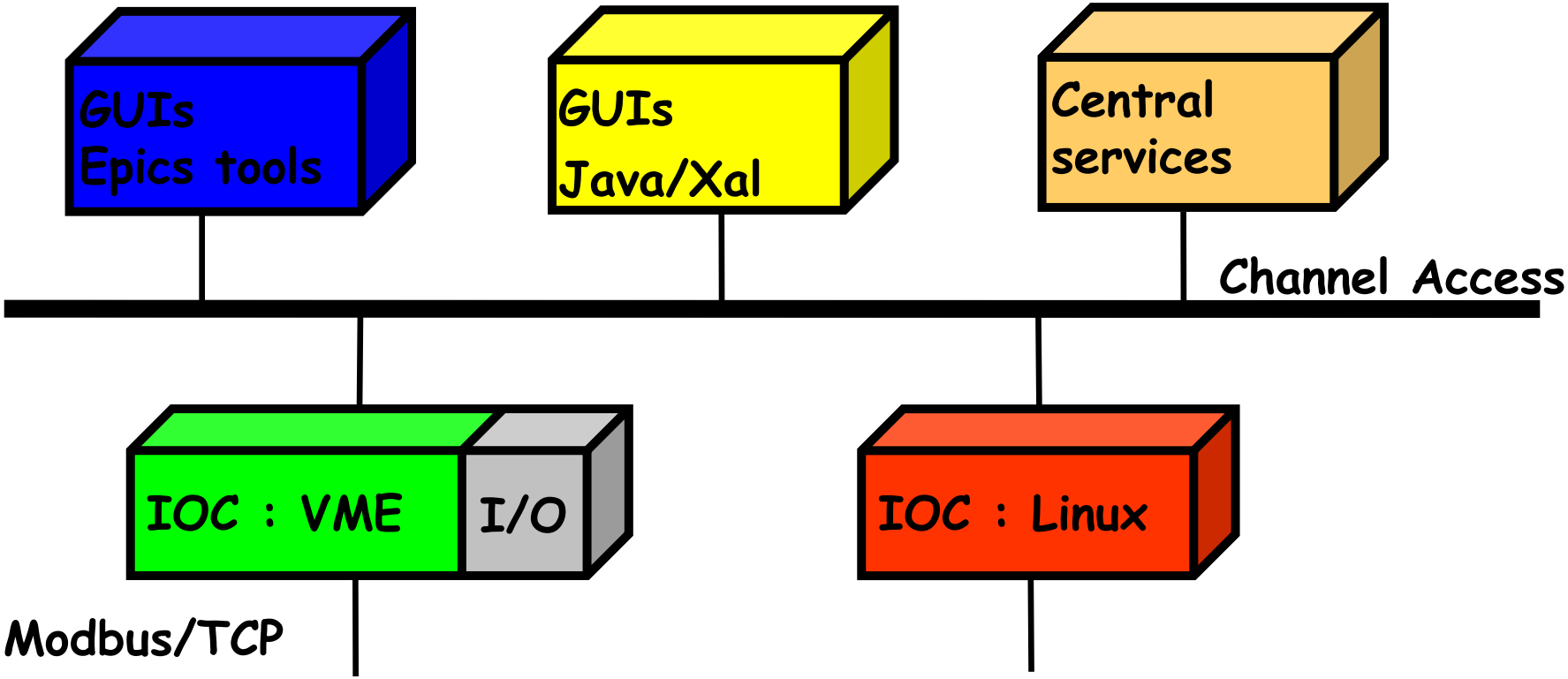

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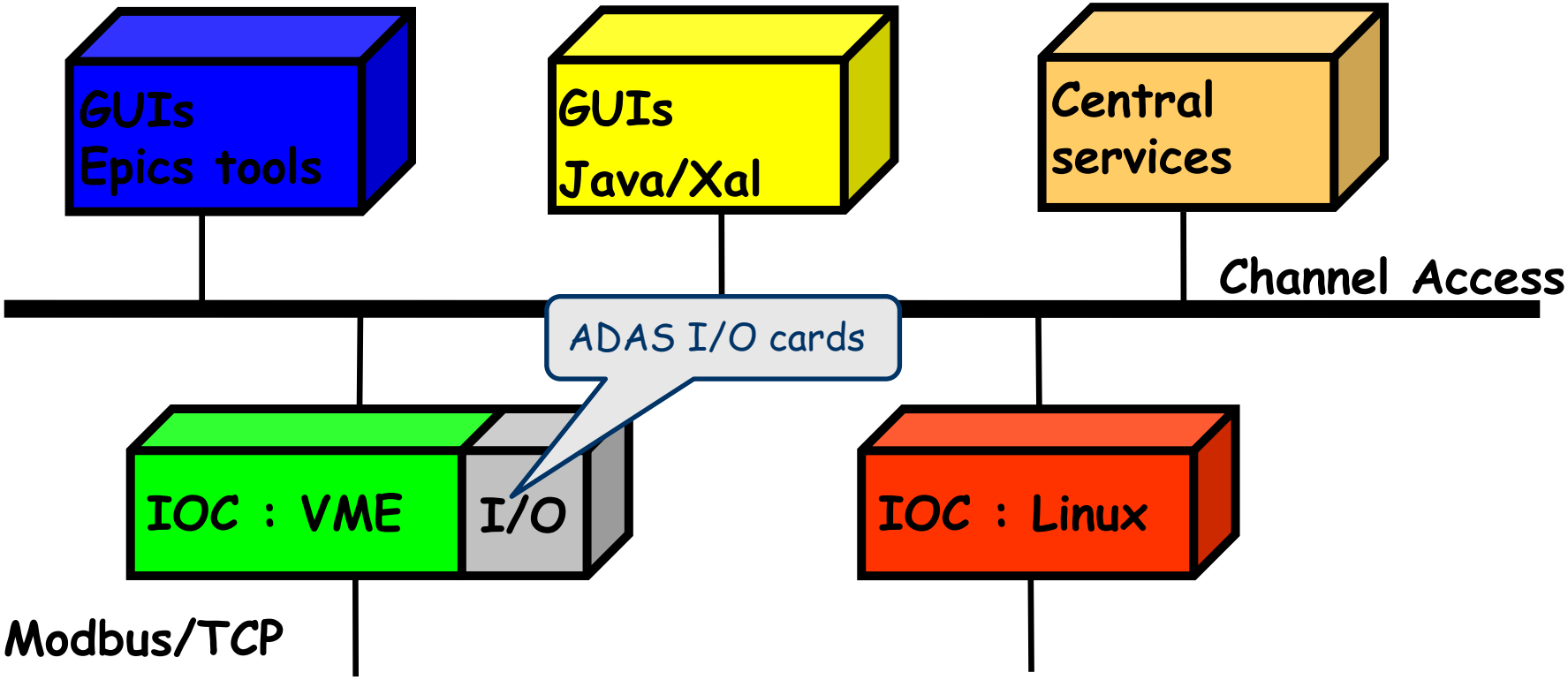

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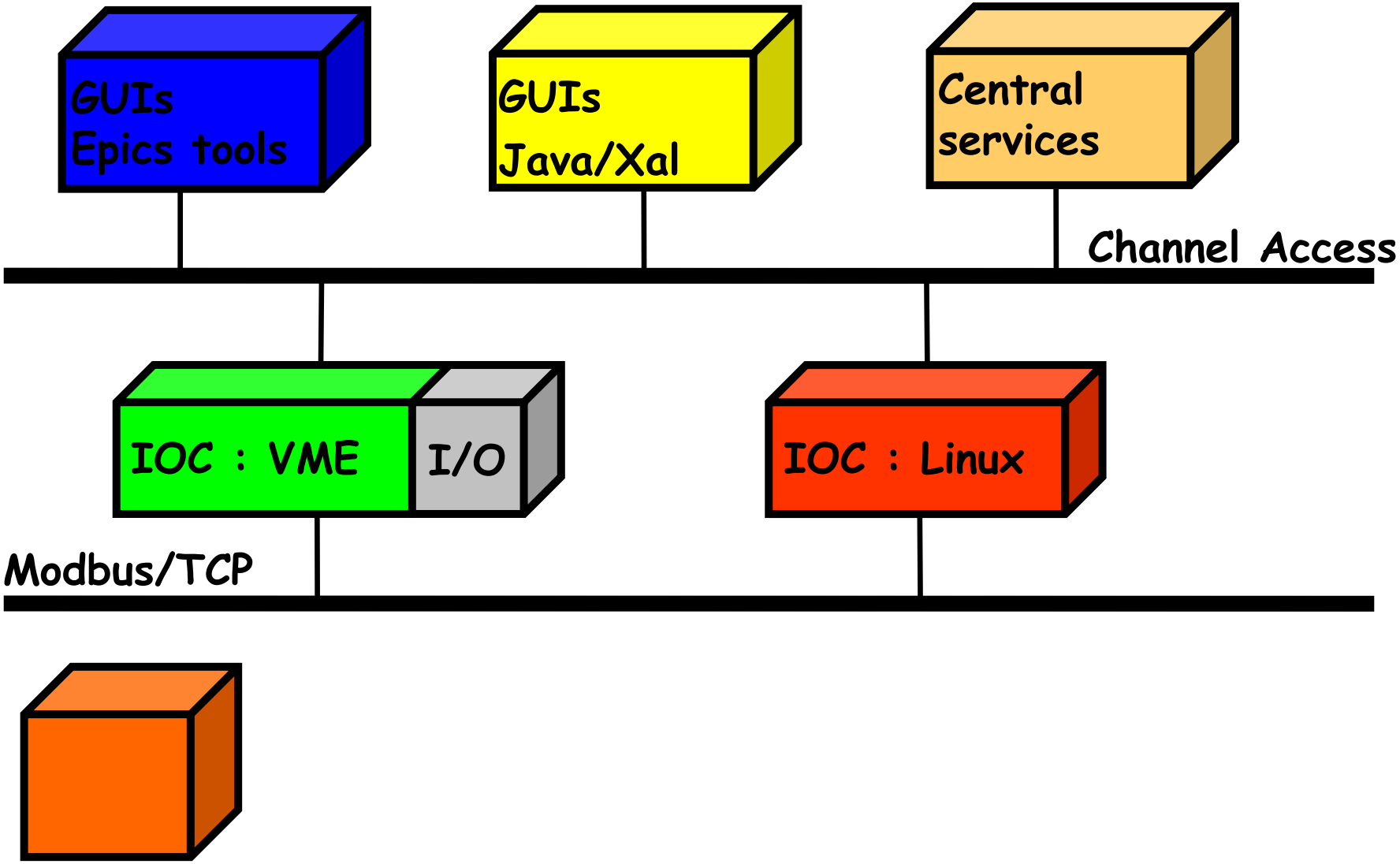

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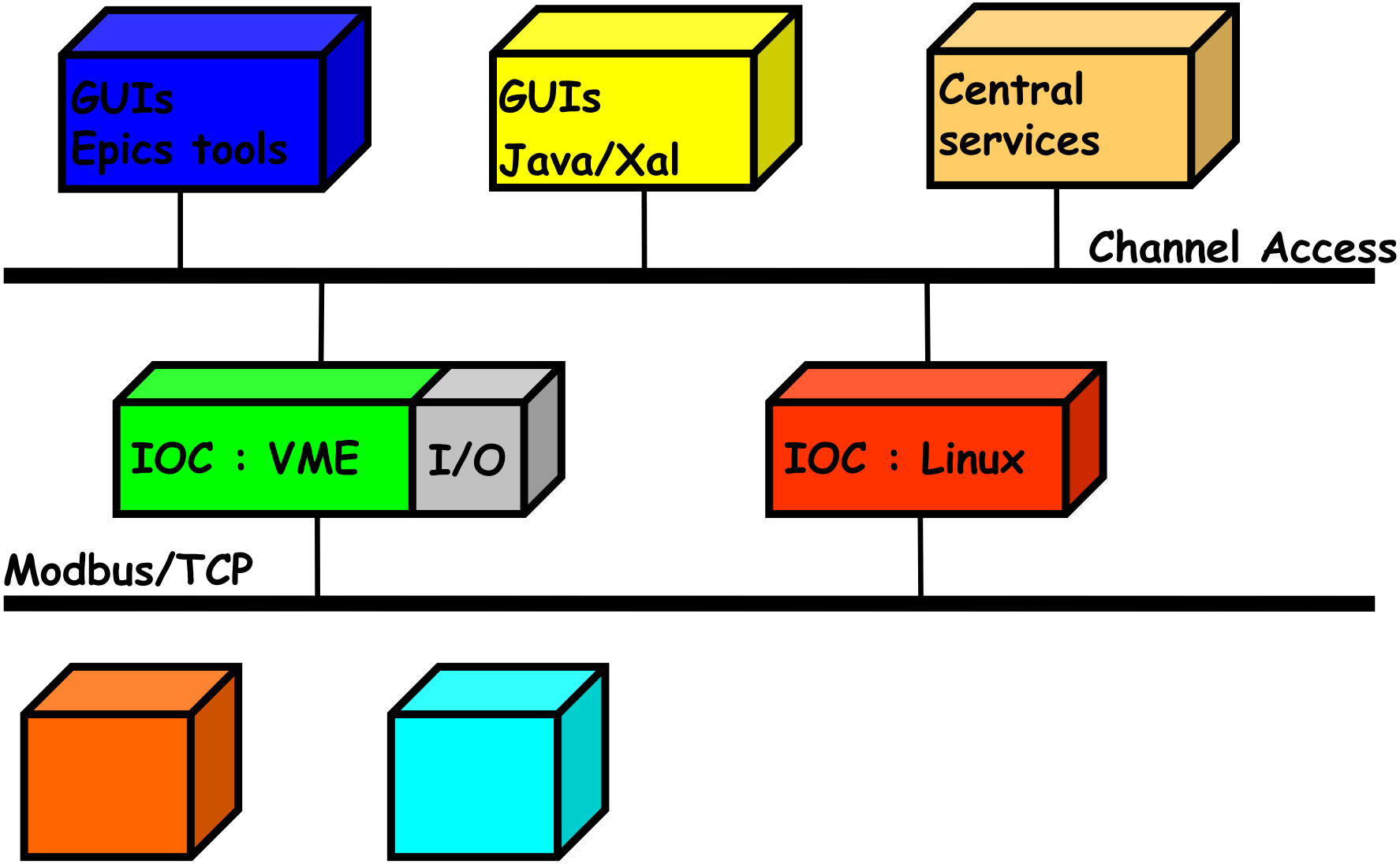

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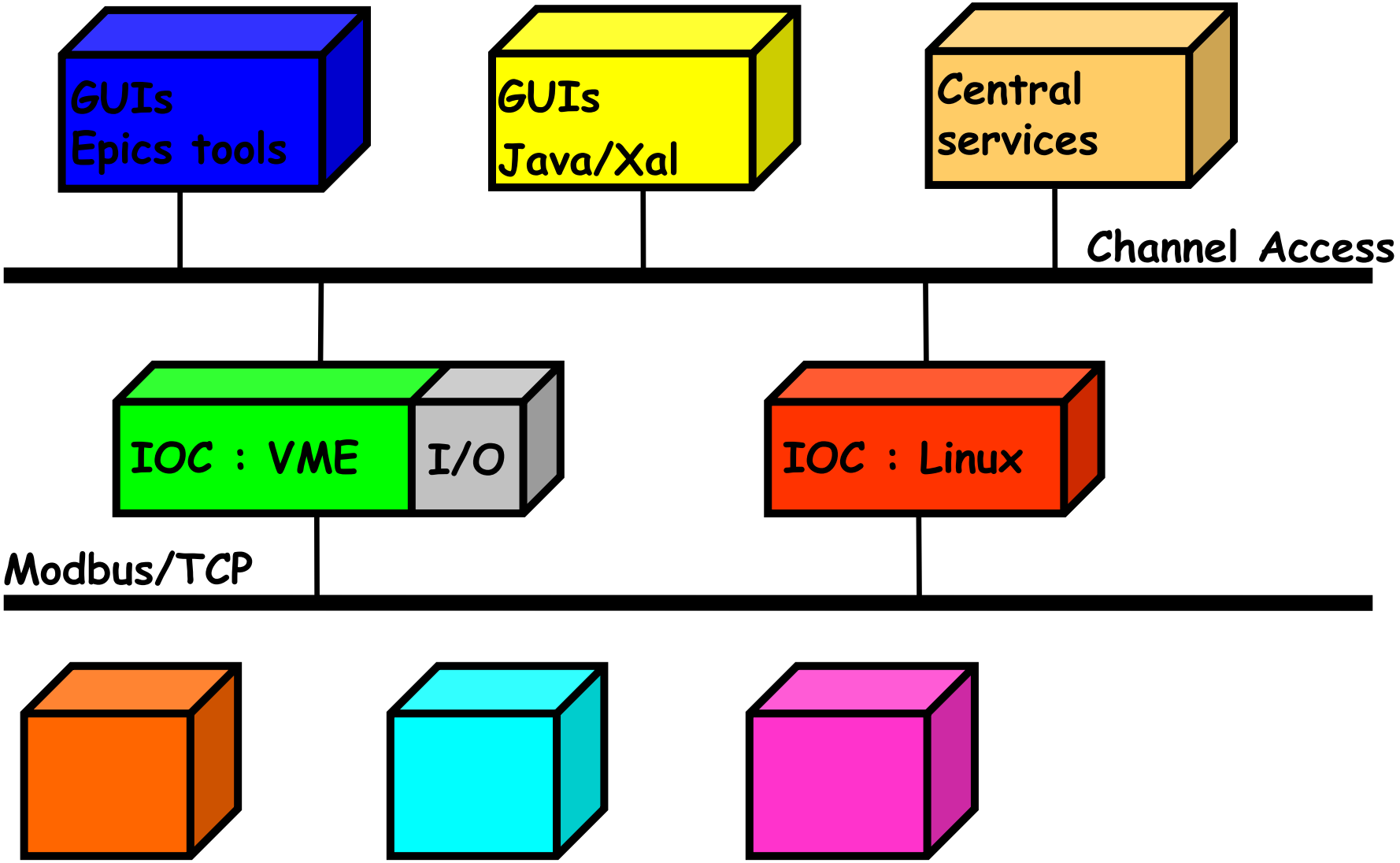

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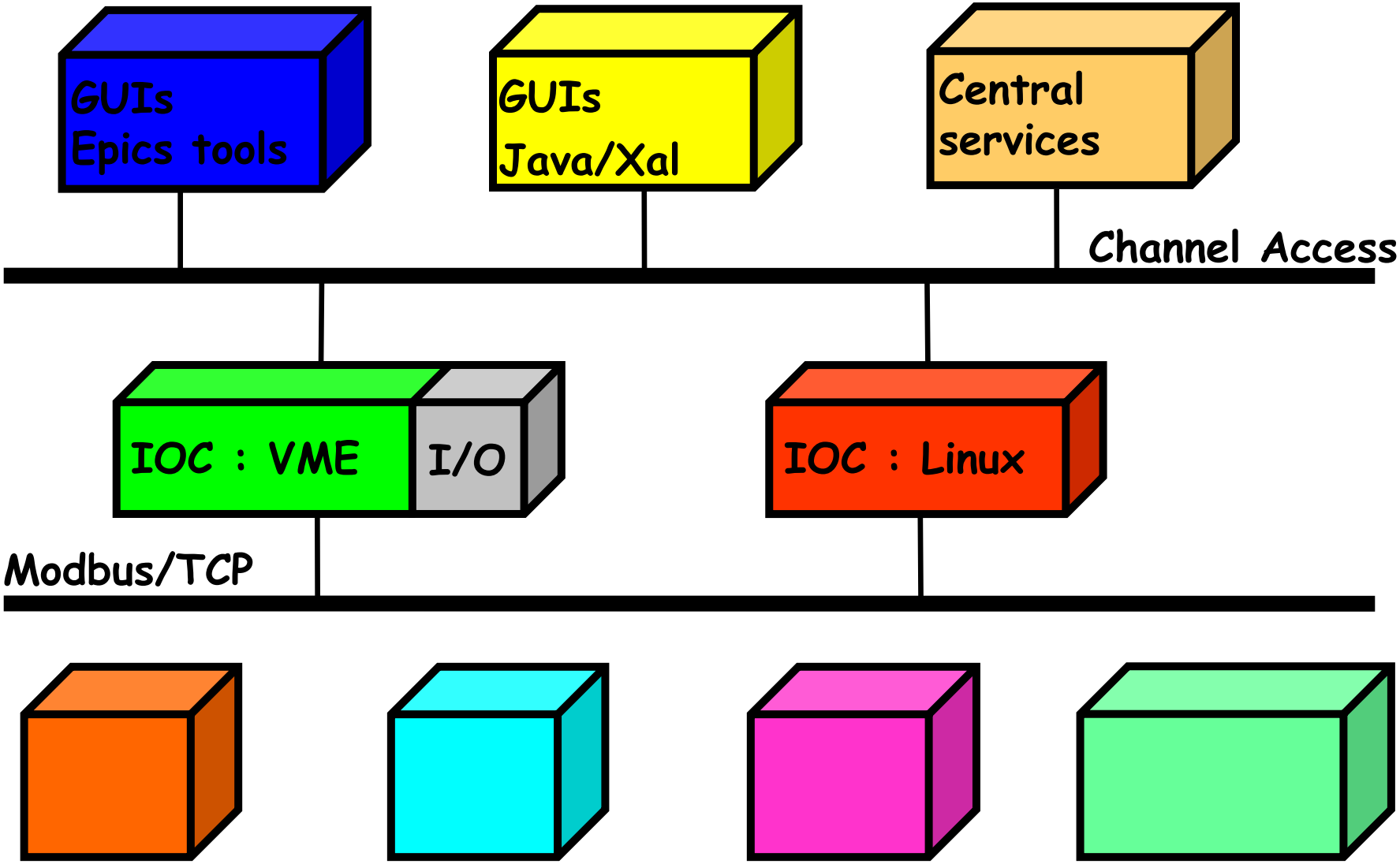

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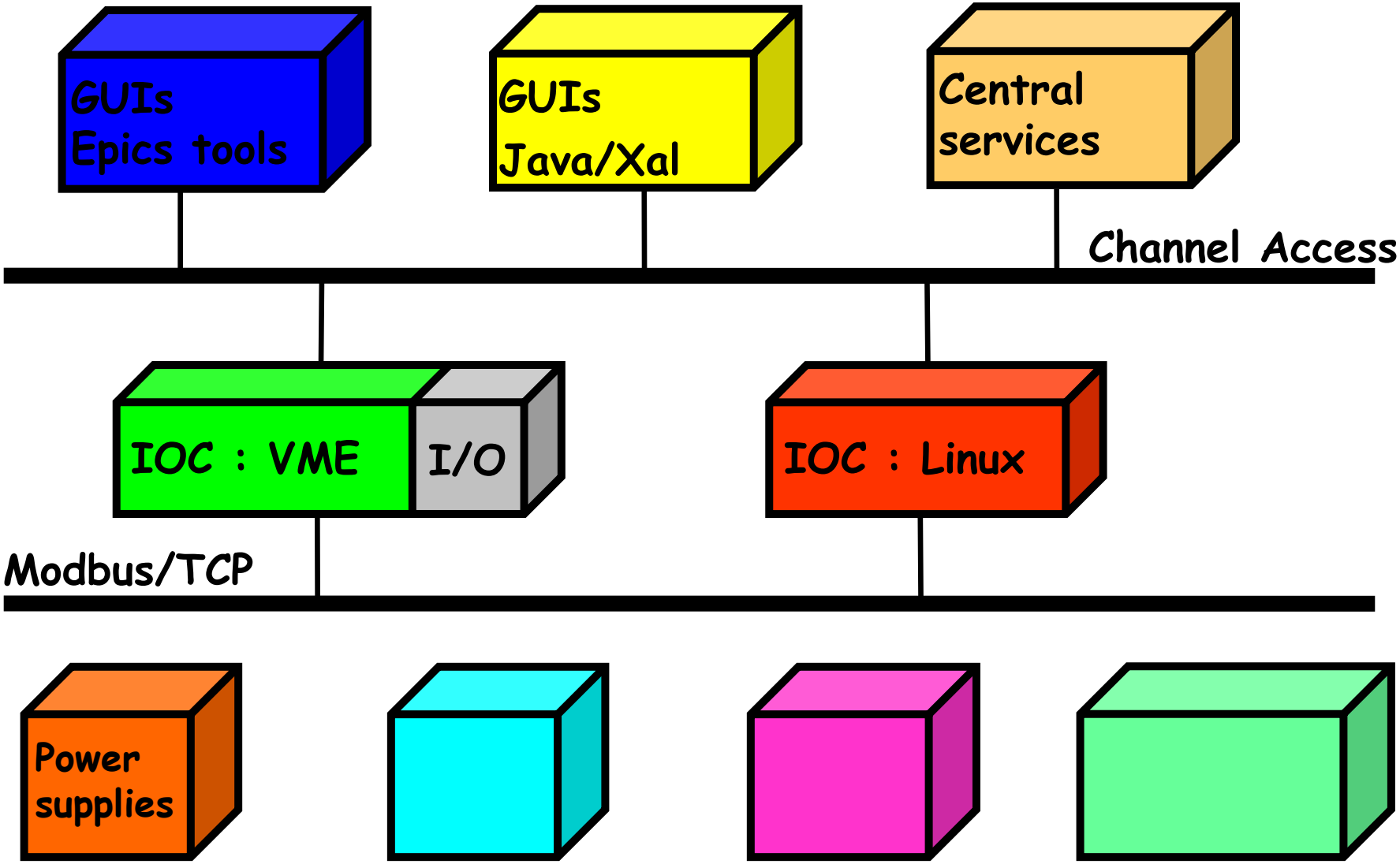

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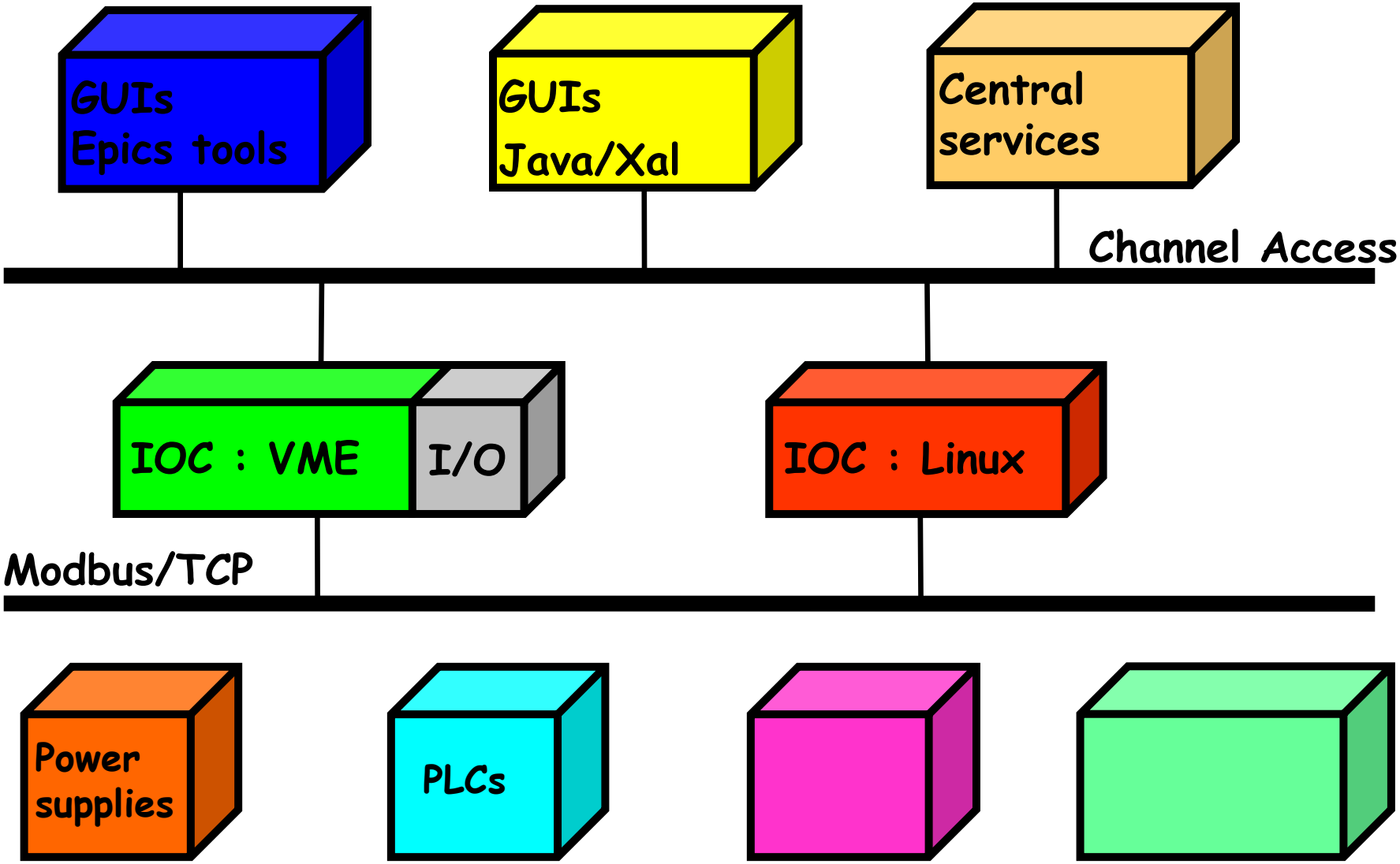

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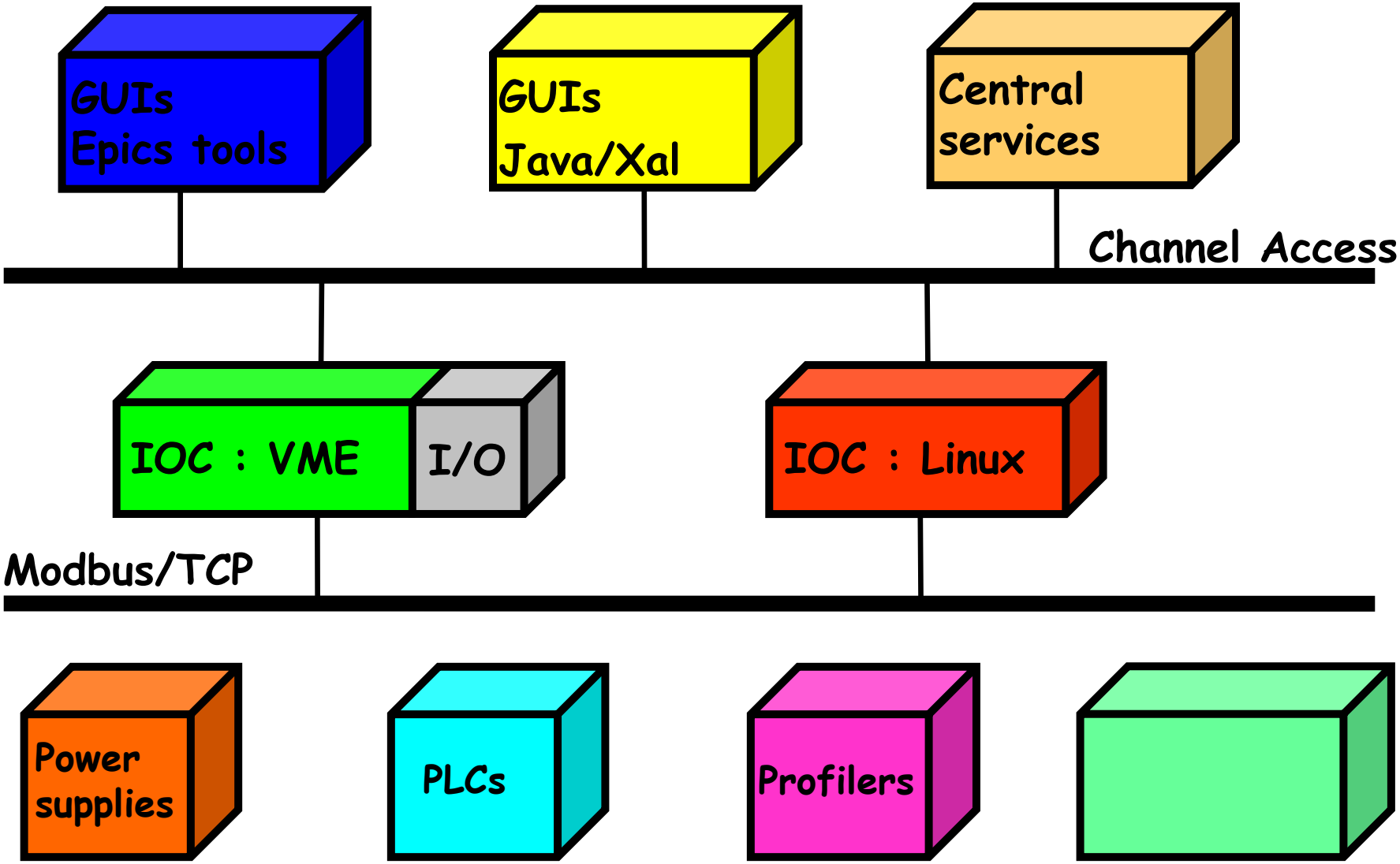

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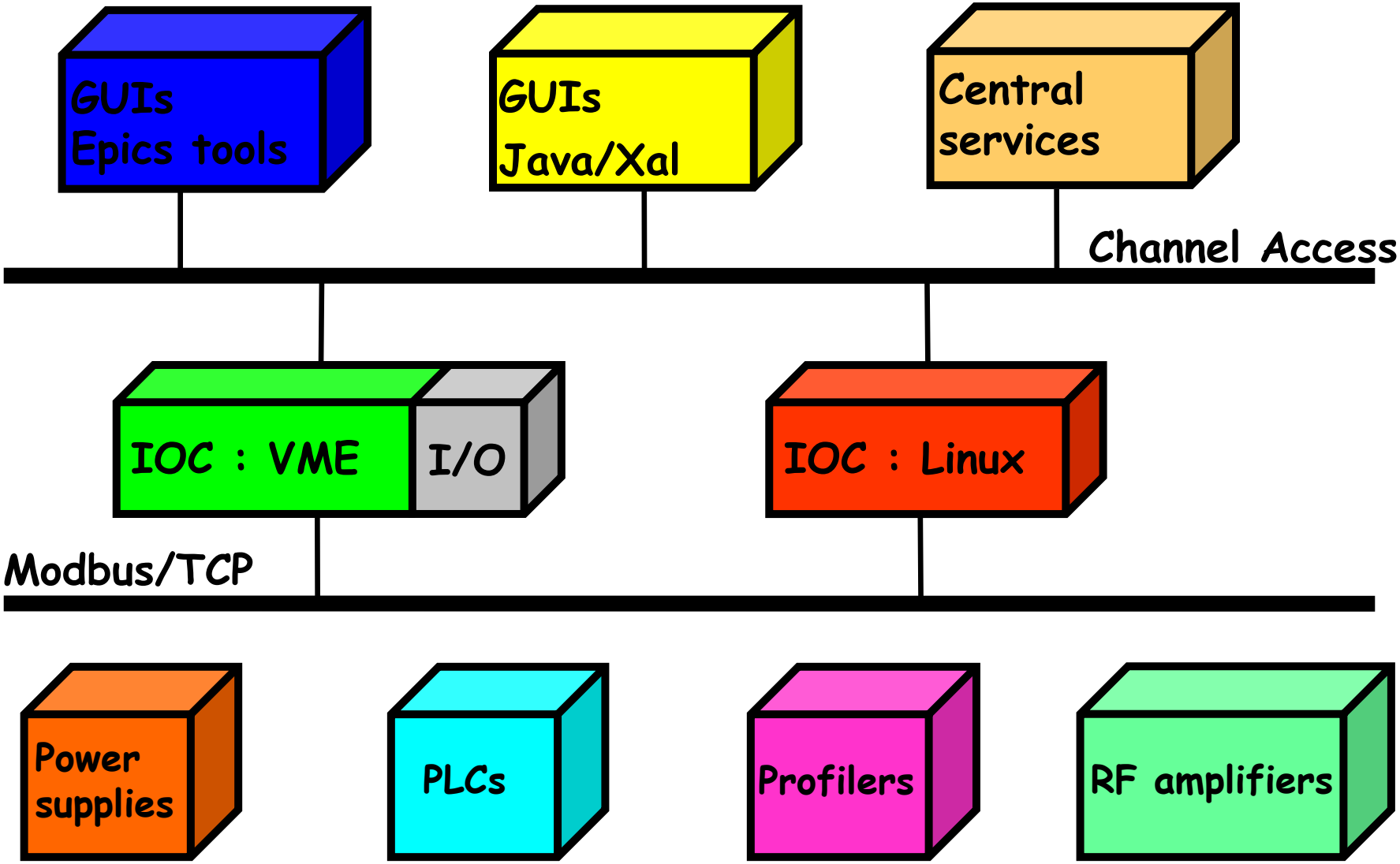

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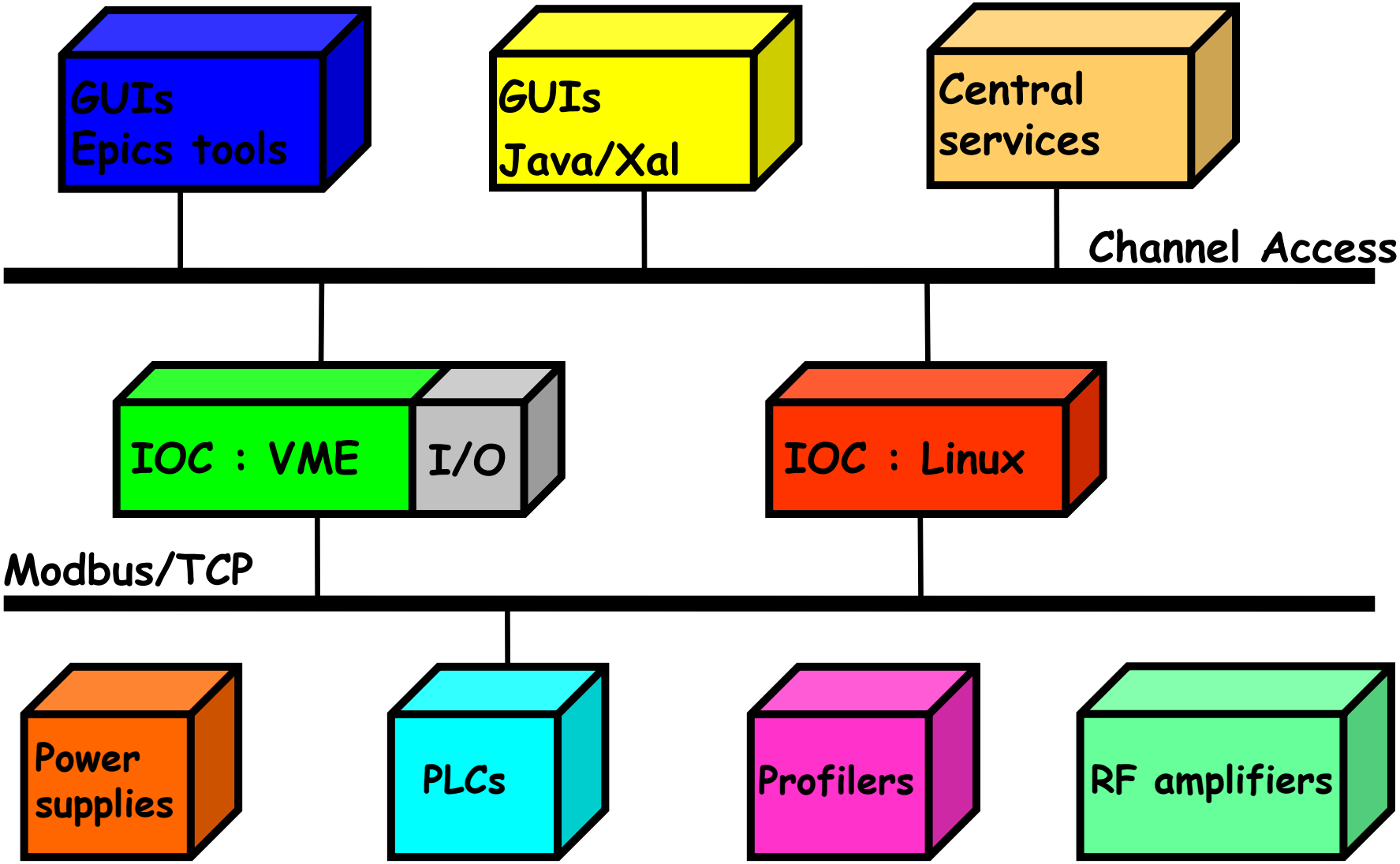

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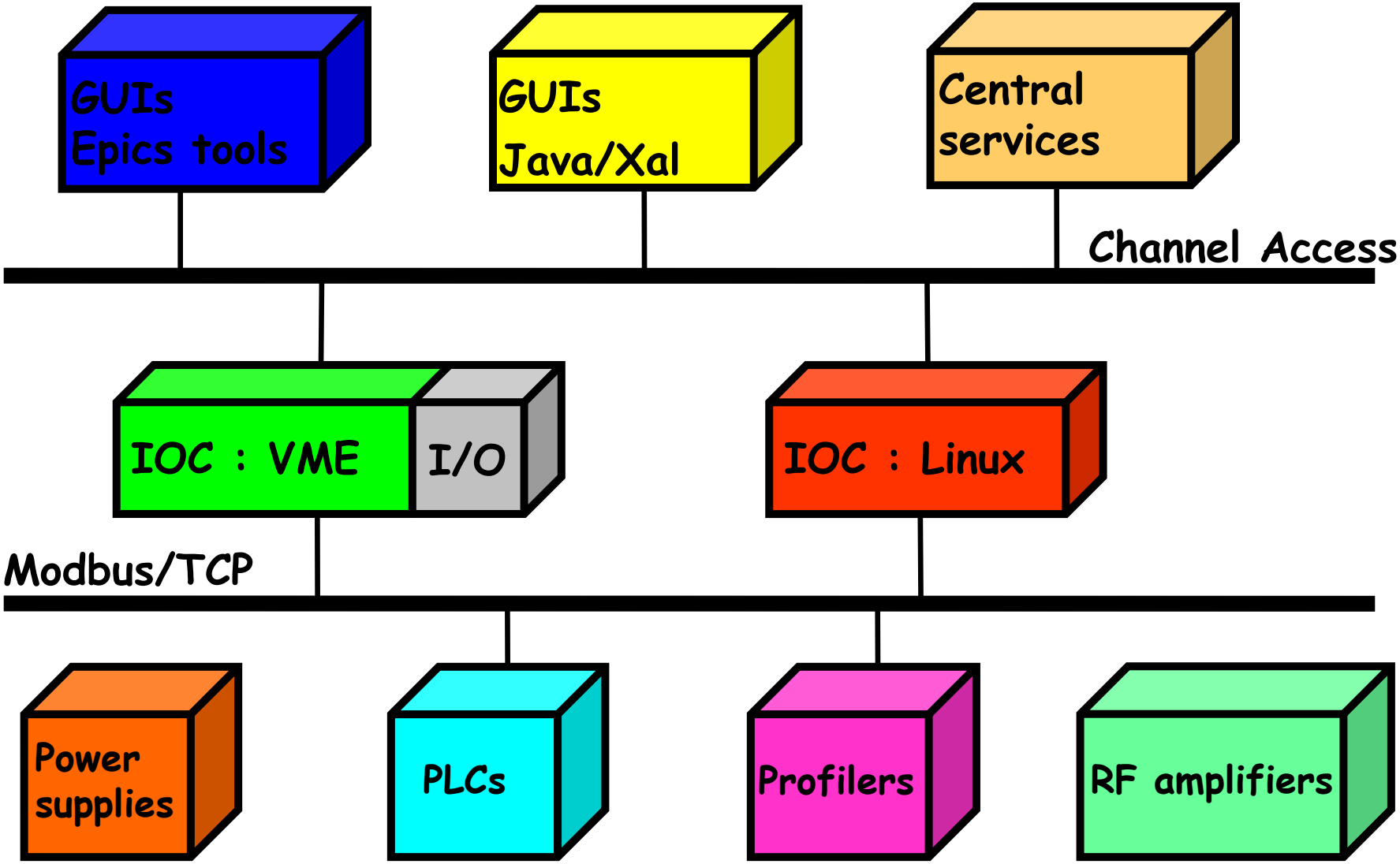

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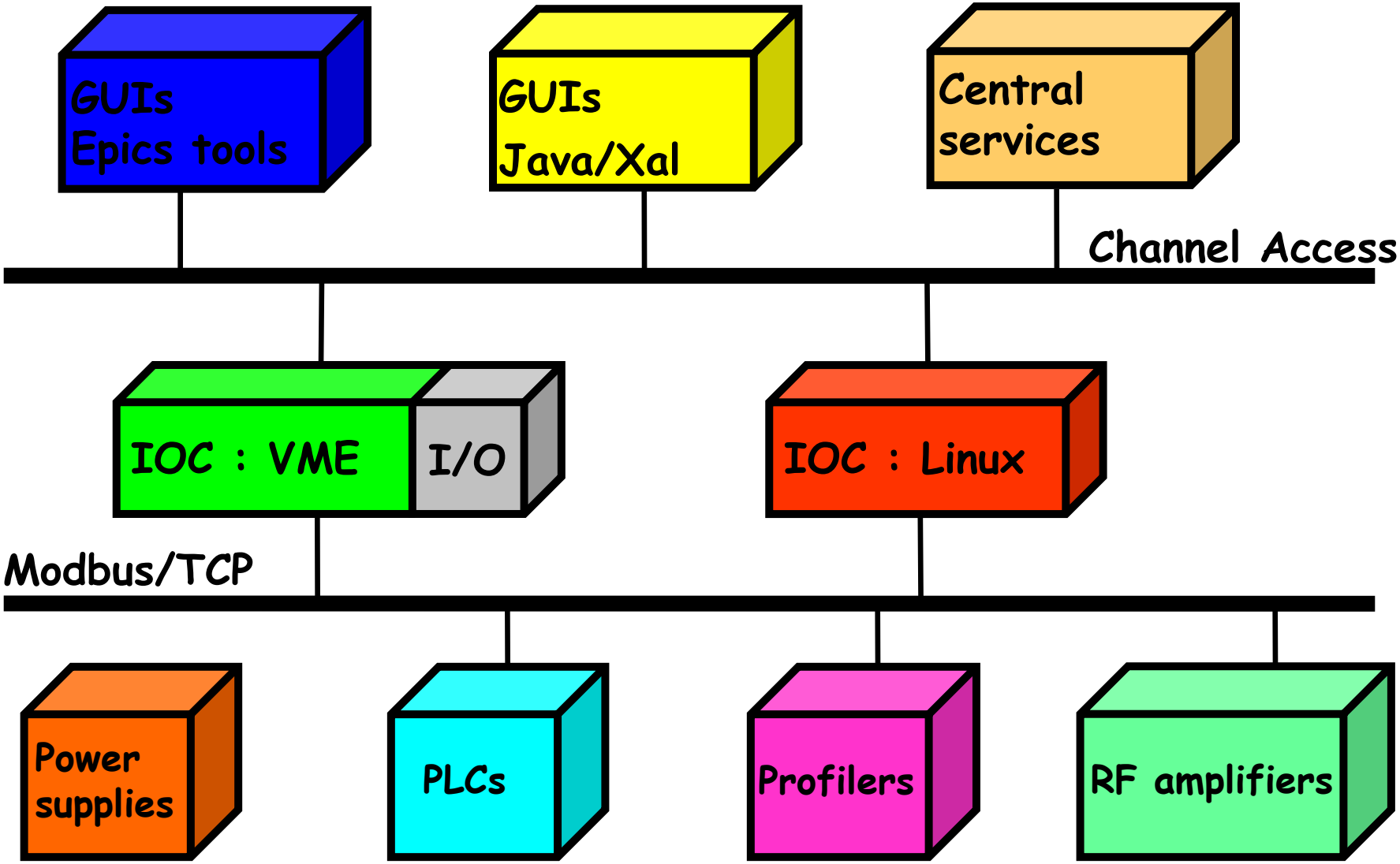

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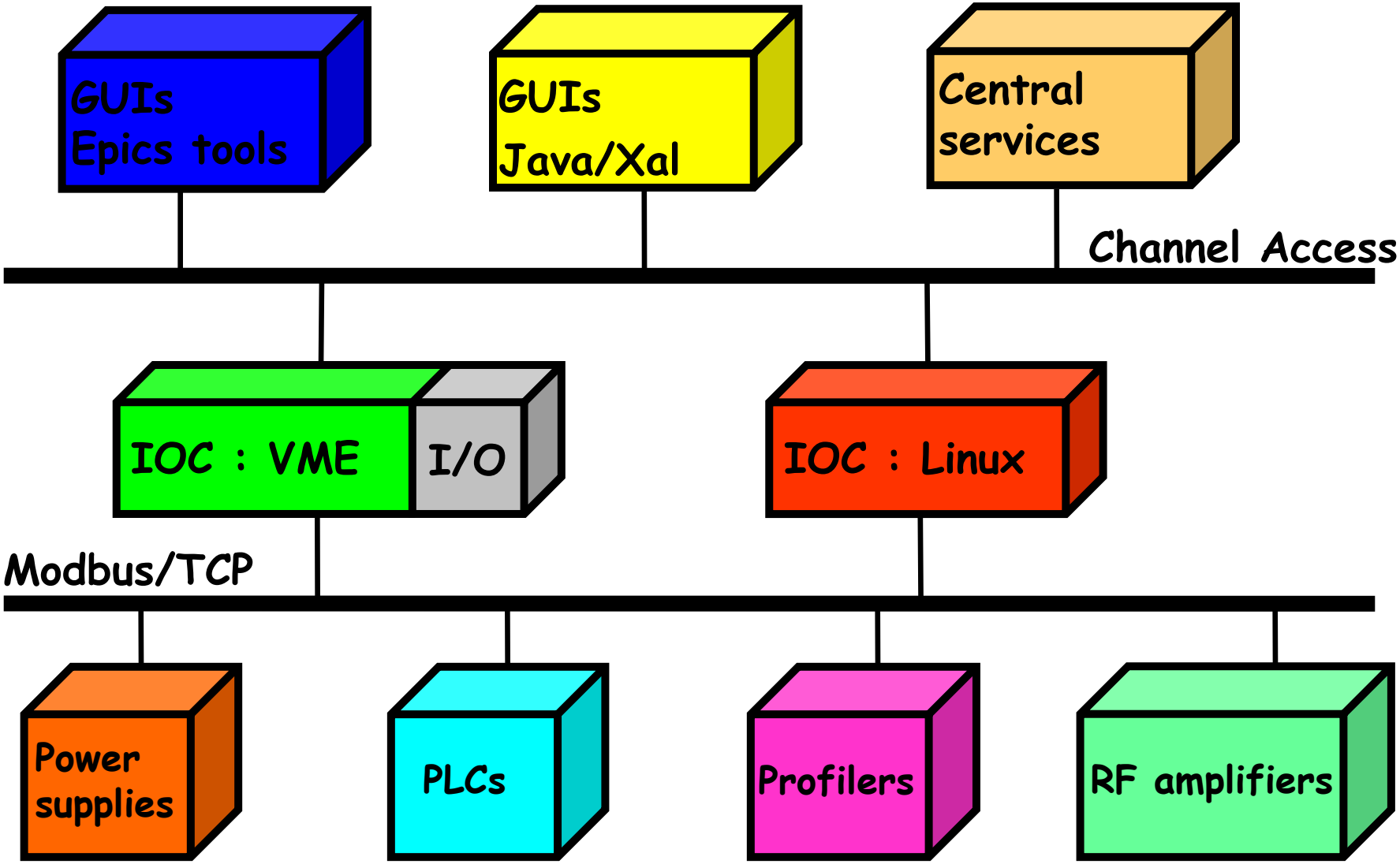

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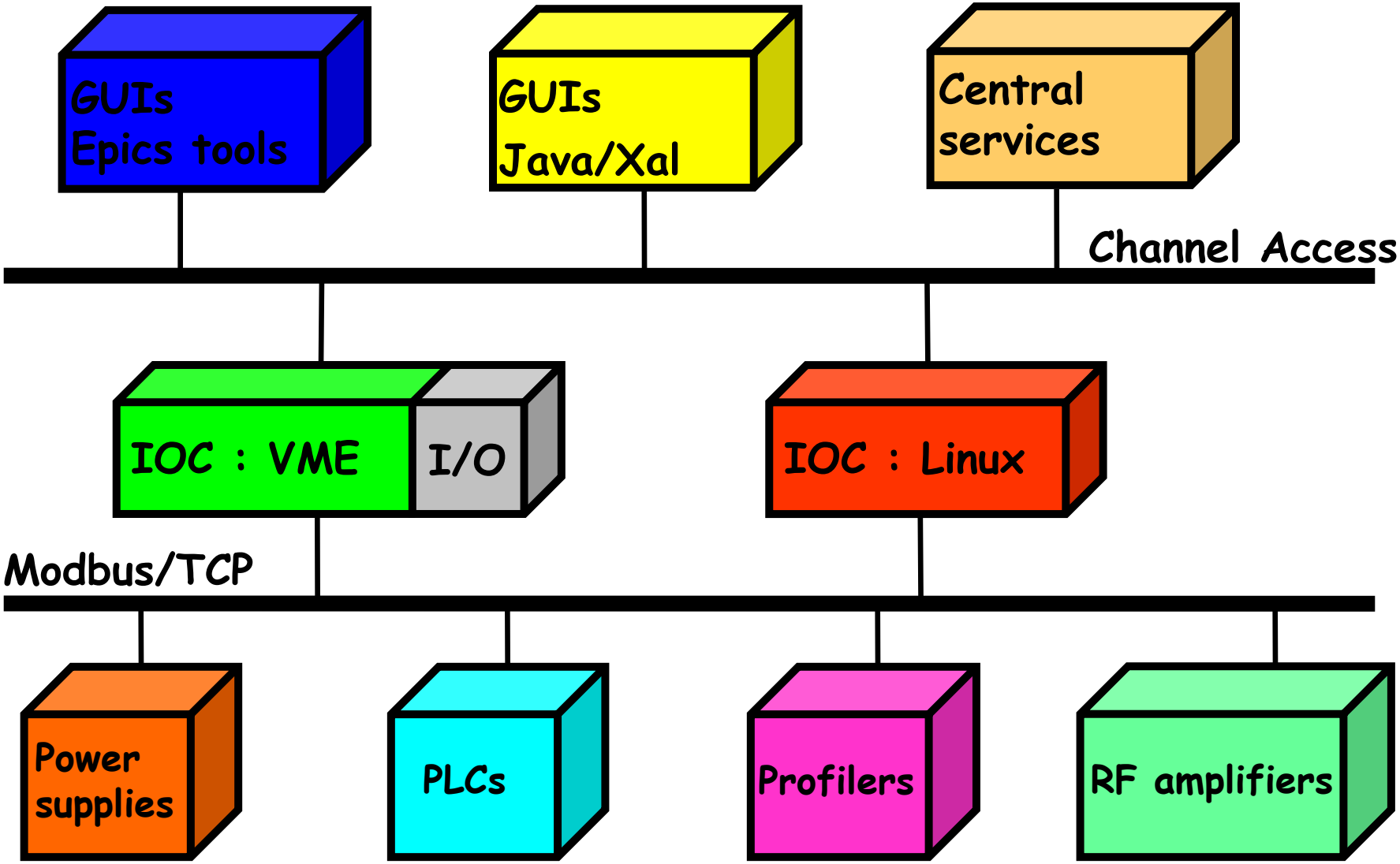

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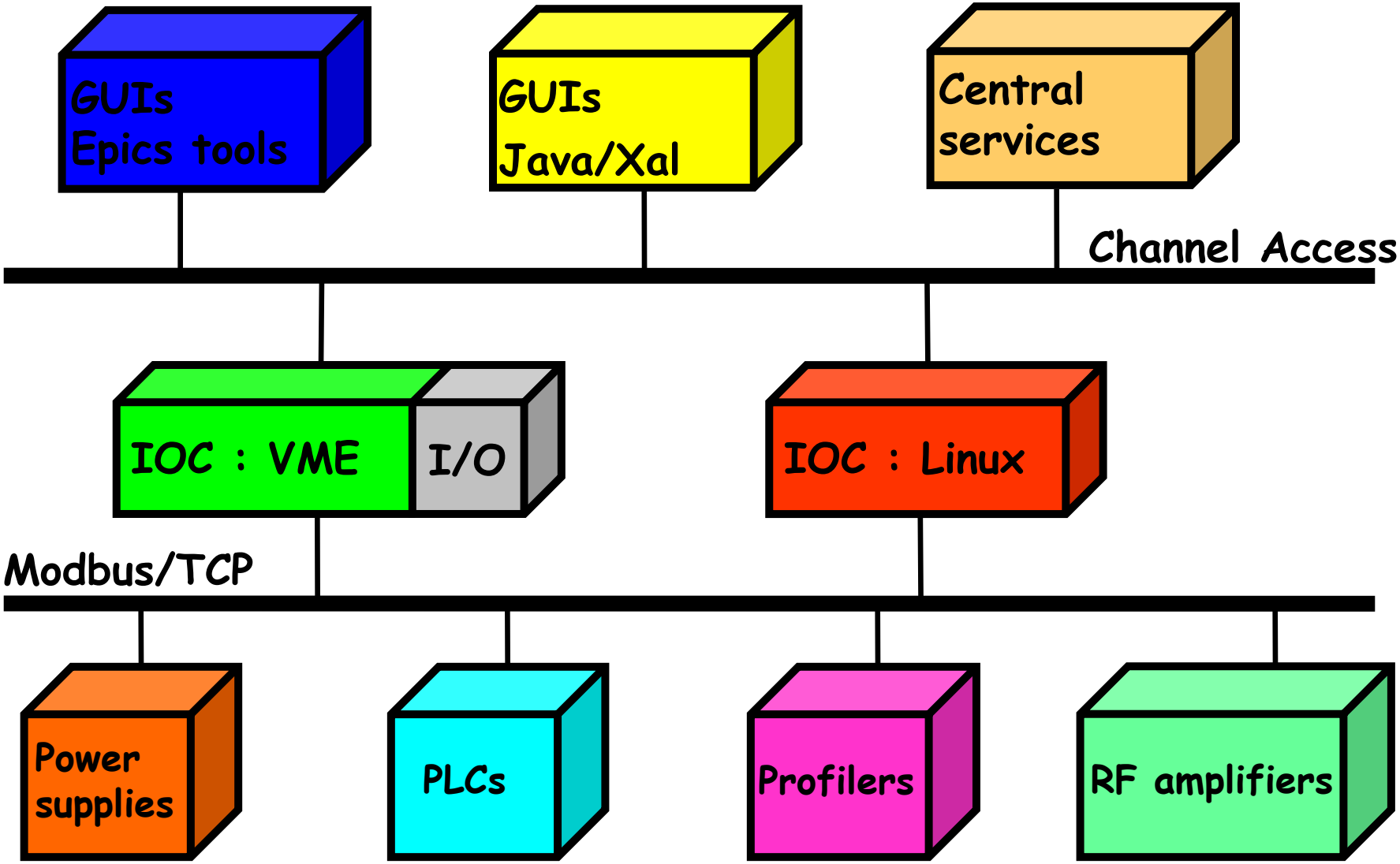

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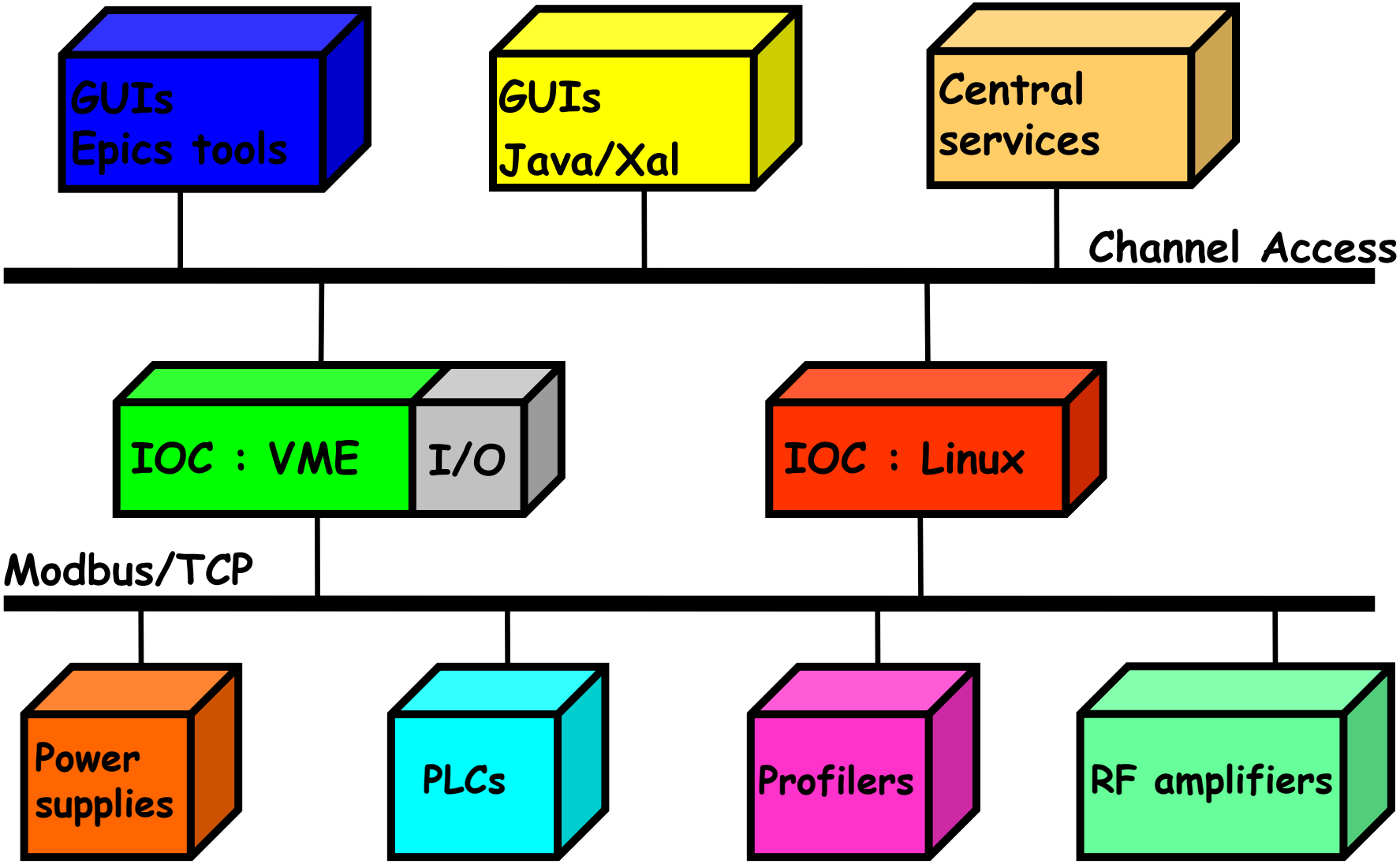

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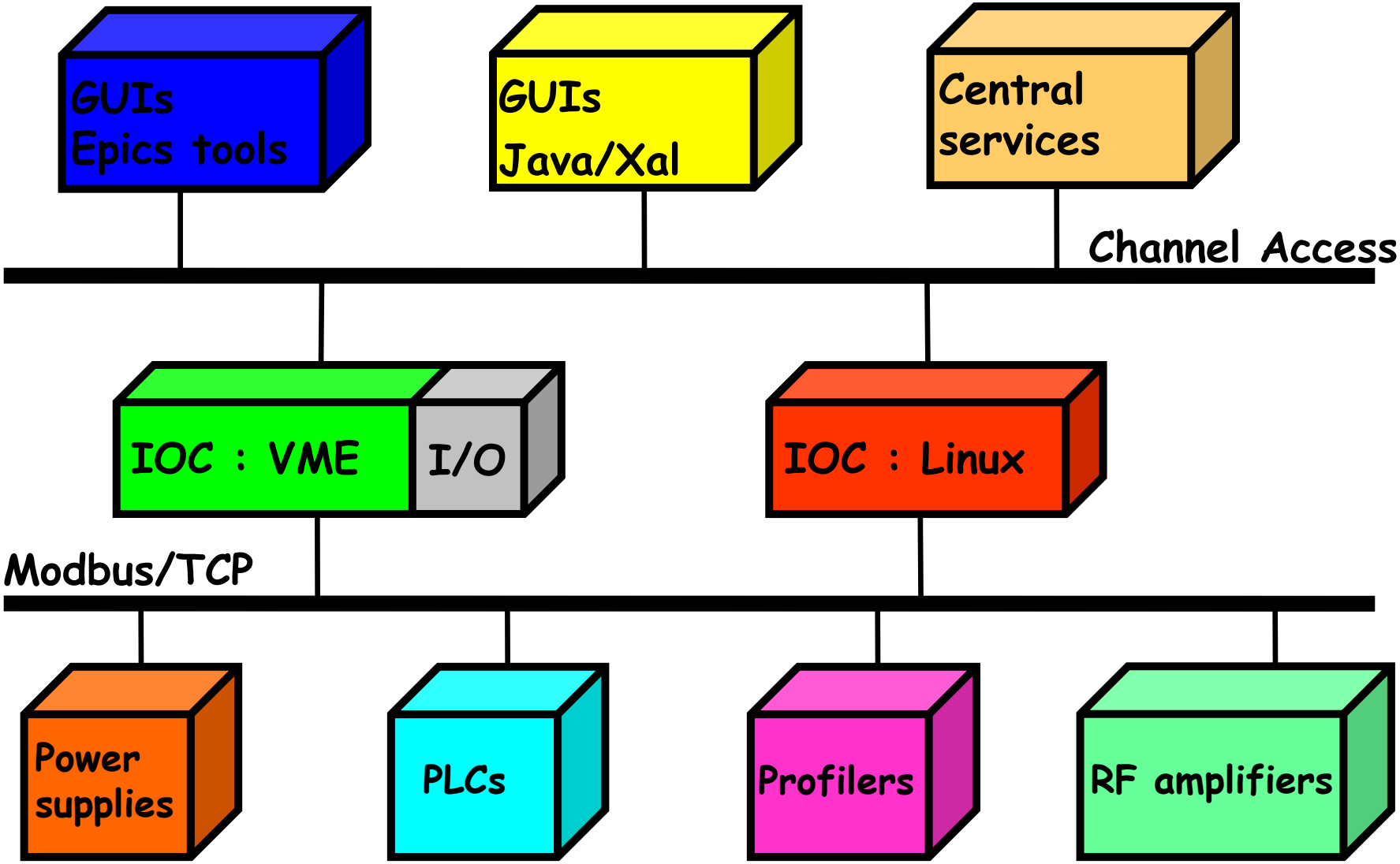


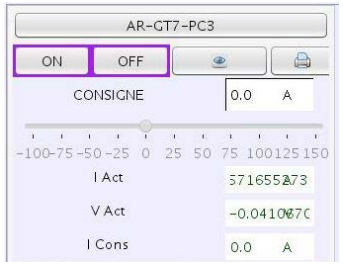
Development organization

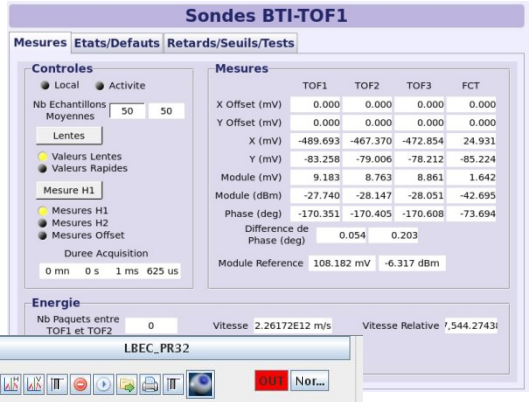
- Collaboration between IRFU, IPHC and GANIL institutes
- Coordination under responsibility of GANIL
- 3 teams
  - 10 men/year since 2006
- Team working organization
  - Common Spiral2 development plateform:
    - ✓ EPICS distribution
    - ✓ VxWorks kernel
    - ✓ Spiral2 version of the EPICS development environment
  - Development shared via SVN repository
  - Rules and Formalization
    - ✓ Standardized interface between EPICS records and GUIs
    - ✓ Specification template for module documentation

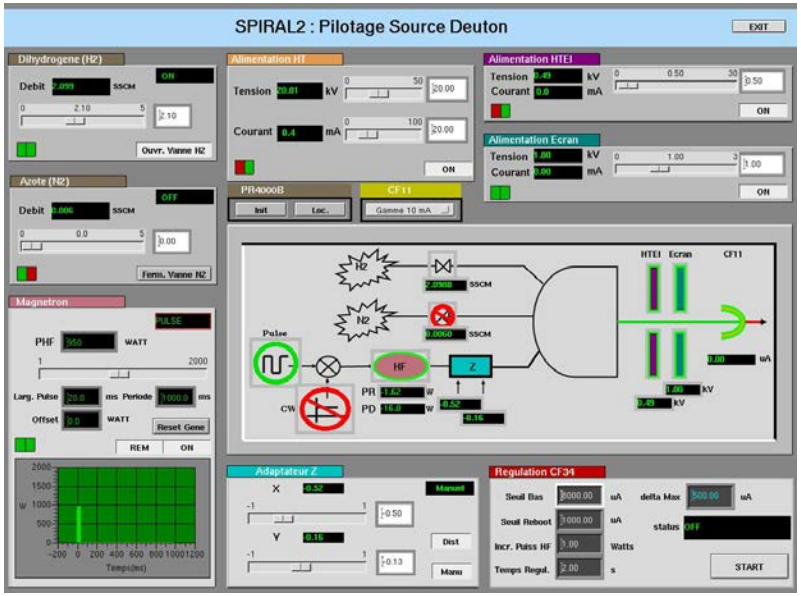
Control System Deliverables

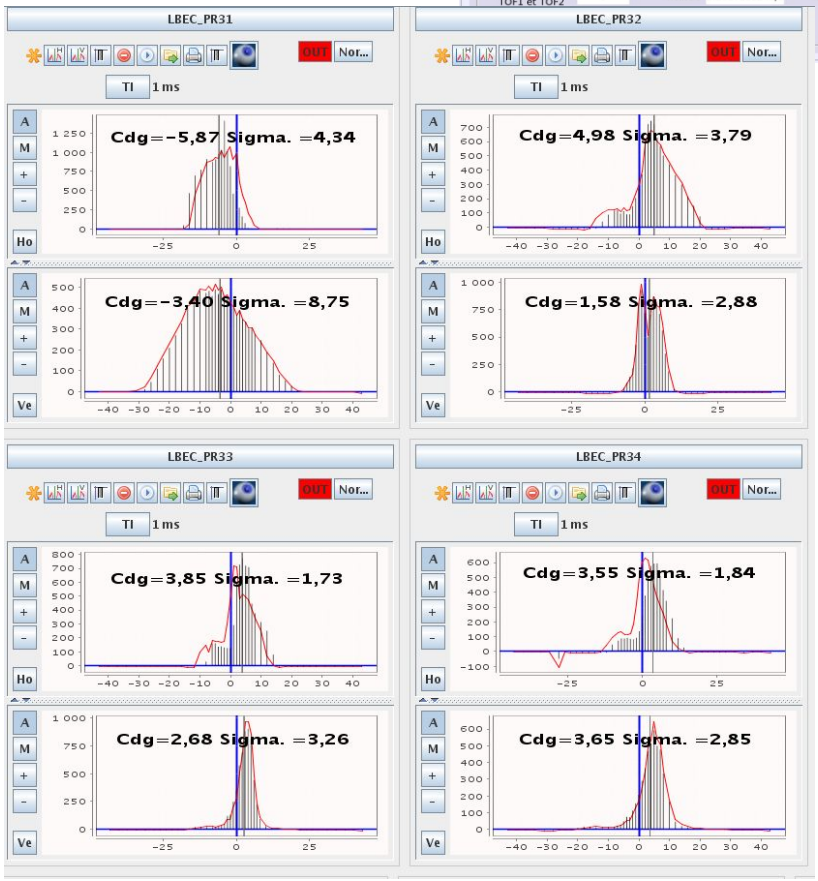
- Development/configuration of 10 central services
  - Examples: RDB for equipment configuration, Alarm management, Archiving …
- Development of 50 GUIs and tuning applications
  - Examples: Beam profiler visualization, beam optics optimization, analysis of the ion sources output …
- Configuration of 15 IOCs
- Development of 30 Equipment Interface Modules
  - Examples: EPICS modules for Faraday cups, RF amplifiers, power supplies, Beam profiler
- Development of 10 Drivers
  - Examples: drivers for VME I/O cards, LLRF, BLM …

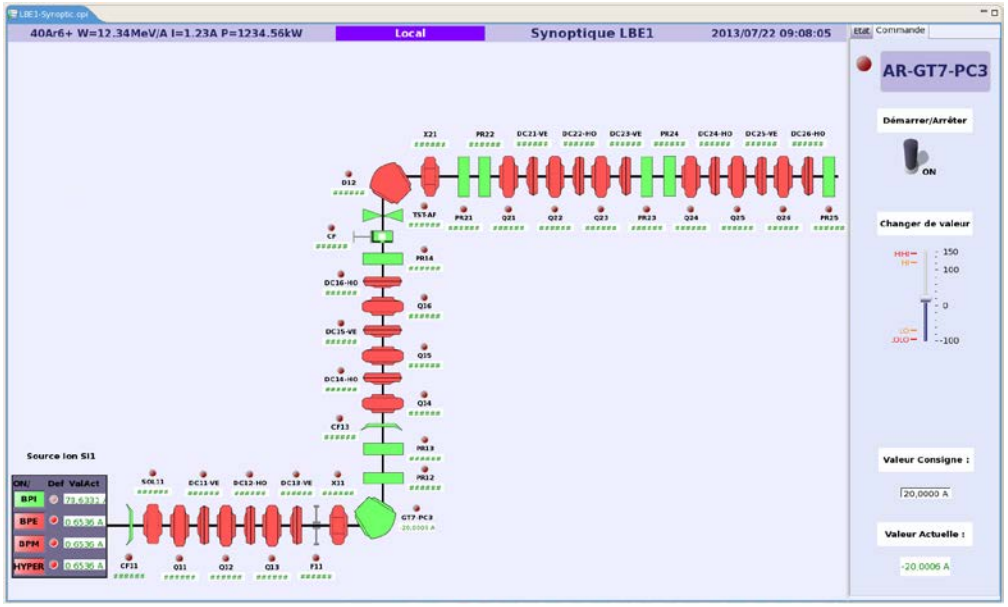
Control System Deliverables











Development Status

- Sources/Low energy beam lines validated during tests performed in Grenoble & Saclay in the past 4 years
  - Ions Sources control
  - 3 first IOCs configured
  - Developments required not only for low energy beam lines
    - ✓ Power supply, Faraday cups, Slits, Beam profiler
  - Central Services
  - Commissionning will start mid-2014
- Important developments are still on going …
  - Beam Loss Monitors, Cavity tuning, Vacuum and many others
  - … must be available end 2014

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