Large Topologies

Learn how to utilize 1394 for networks of over 63 devices and how to avoid some of the pitfalls that come from sending data over long distances.

October 13th. 2008 1394 Design Seminar Robby Gurdan UMAN

Who needs this?

- Does it, after all, make sense to have more then a hand-full 1394 devices?
- What about available bandwidth?
- What options do I have to go beyond 4,5m cabling?
- Subnets, Bridges, Routers and other scary things
- How to *NOT* loose your low latency in larger subnet structures
- How to handle the setup of a large system?

Does it make sense to have more devices?

- Yes! It does in many cases!
- You might have many devices with a limited bandwidth
- You might need many listeners
- You might need redundant systems
- You might have devices in several „clusters“

What about available bandwidth?

- Bandwidth is limited even on S 800 Systems
- Choose a solution that provides a highly flexible AVS
- USE these options and make them usable by your user!
- Use a tight bandwidth allocation
- Because of „unlimited“ listeners bandwidth is in fact much larger
- Use your topology to save bandwidth (e.g. process your streams at your target subnet not at the source!)

What options do I have to go beyond 4,5m?

- 1394b compatible devices or (at least “hubbed”)
- Cat 5/6 Line Equalizer(e.g.Ecqologic EQCO400T) 50-100m
- optical fiber multimode < 1000m
- Optical fiber single mode > 1000m

Subnets, Bridges, Routers and other scary things

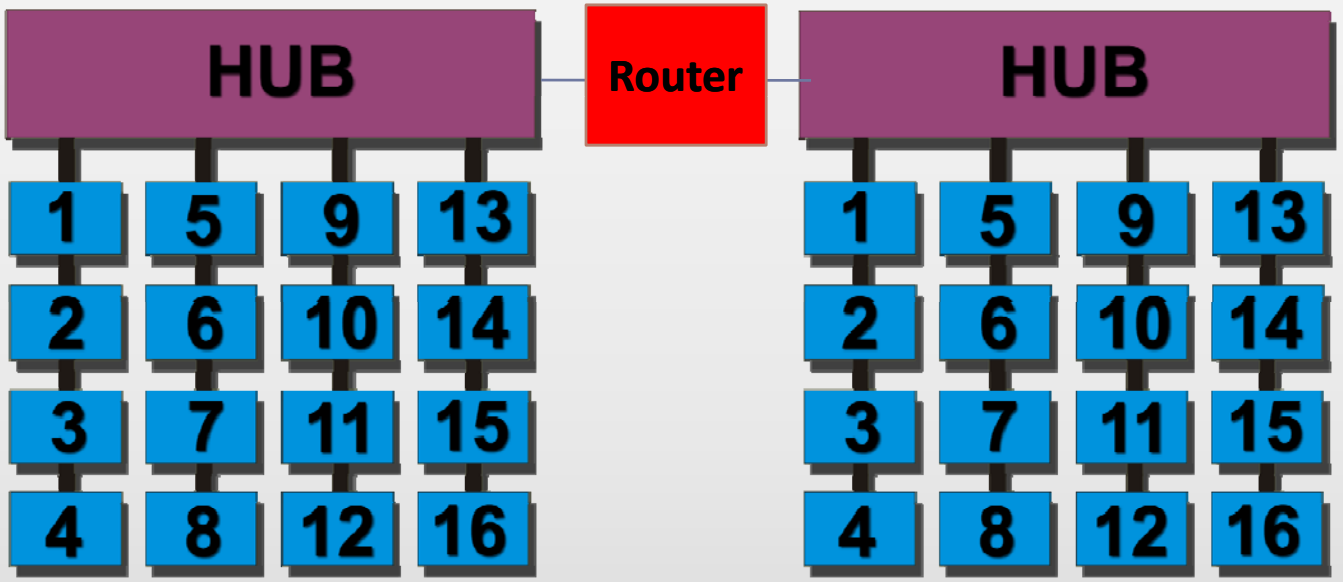
- At least if you are using more then 63 devices
- You need one or several Bridges/Router(s)
- either 1394.1 compliant (availability?!) or using IP

- Using 1394.1 gives you many devices (up to 65000) but also a pretty rough start (almost no implementations)

- Using IP over 1394 enables your devices to utilize standard internet protocols ***and*** has a rich repository of code and solutions already in place ***and*** is compatible to the TCP/IP universe.

How to *NOT* loose your low latency

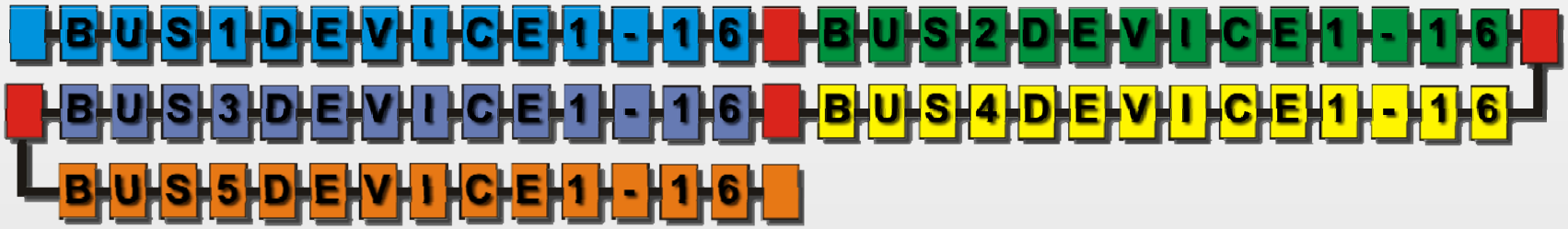
- Bad: partially Daisy chained devices (up to 8 Rows with up to 8 devices), no redundancy, complex setup.



How to *NOT* loose your low latency

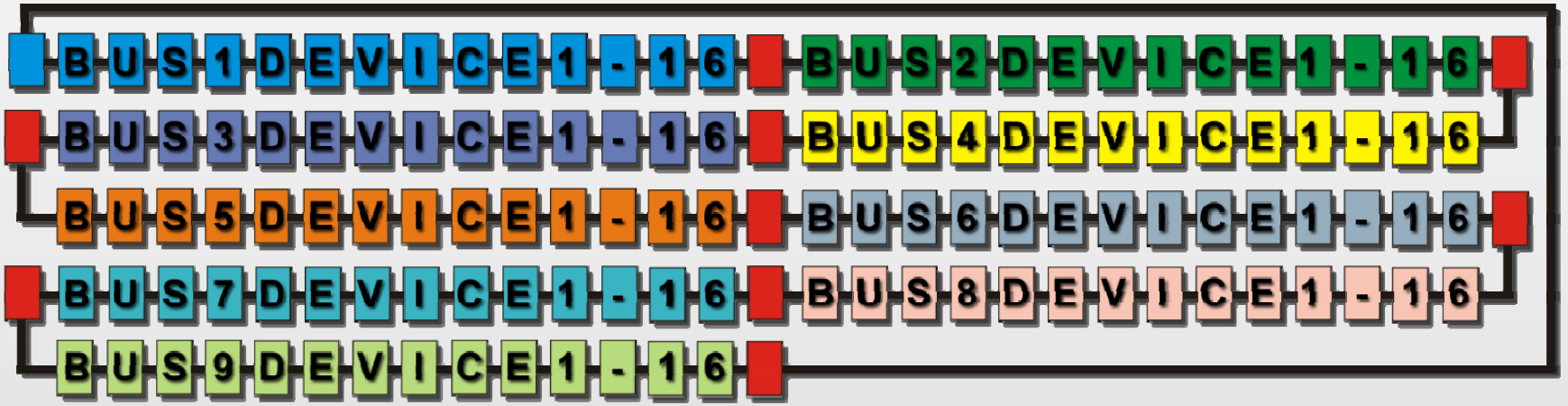
- Bad: Daisy chained devices (up to 16 per bus)

  easy setup no redundancy relatively high latency (assumed ca 1ms max)



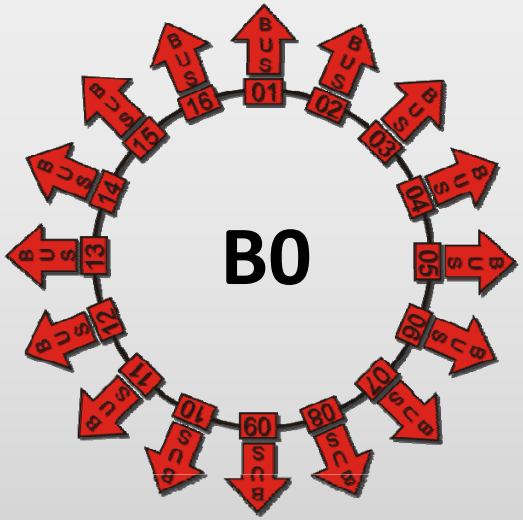
How to *NOT* loose your low latency

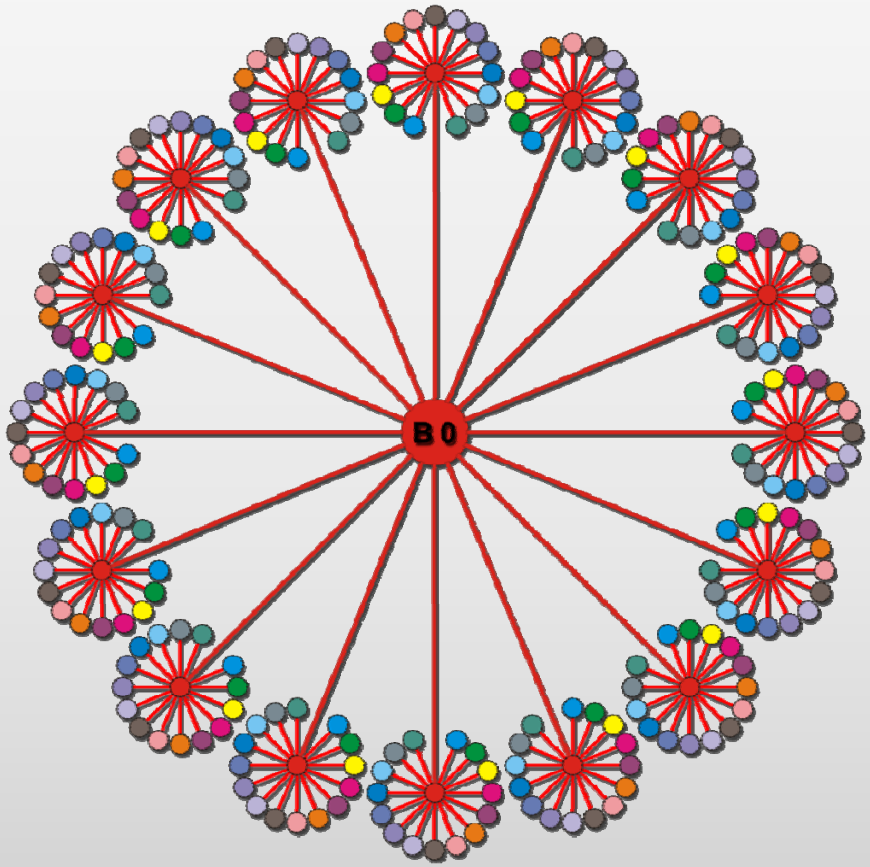
- Better: Daisy chained simple looped devices (up to 16) per bus
  easy setup, network redundant, 100% more devices having the same latency then if not looped!
- (assumed ca 1ms max)



How to *NOT* loose your low latency

- Good: multi backbone, daisy chained multi loop topology
  easy setup, bus redundant (every bus is redundant),
- **This network consists of 16x15x15 = 3600 devices and 16x 15 = 240 routers with a total network latency of less then 1ms max!!!**



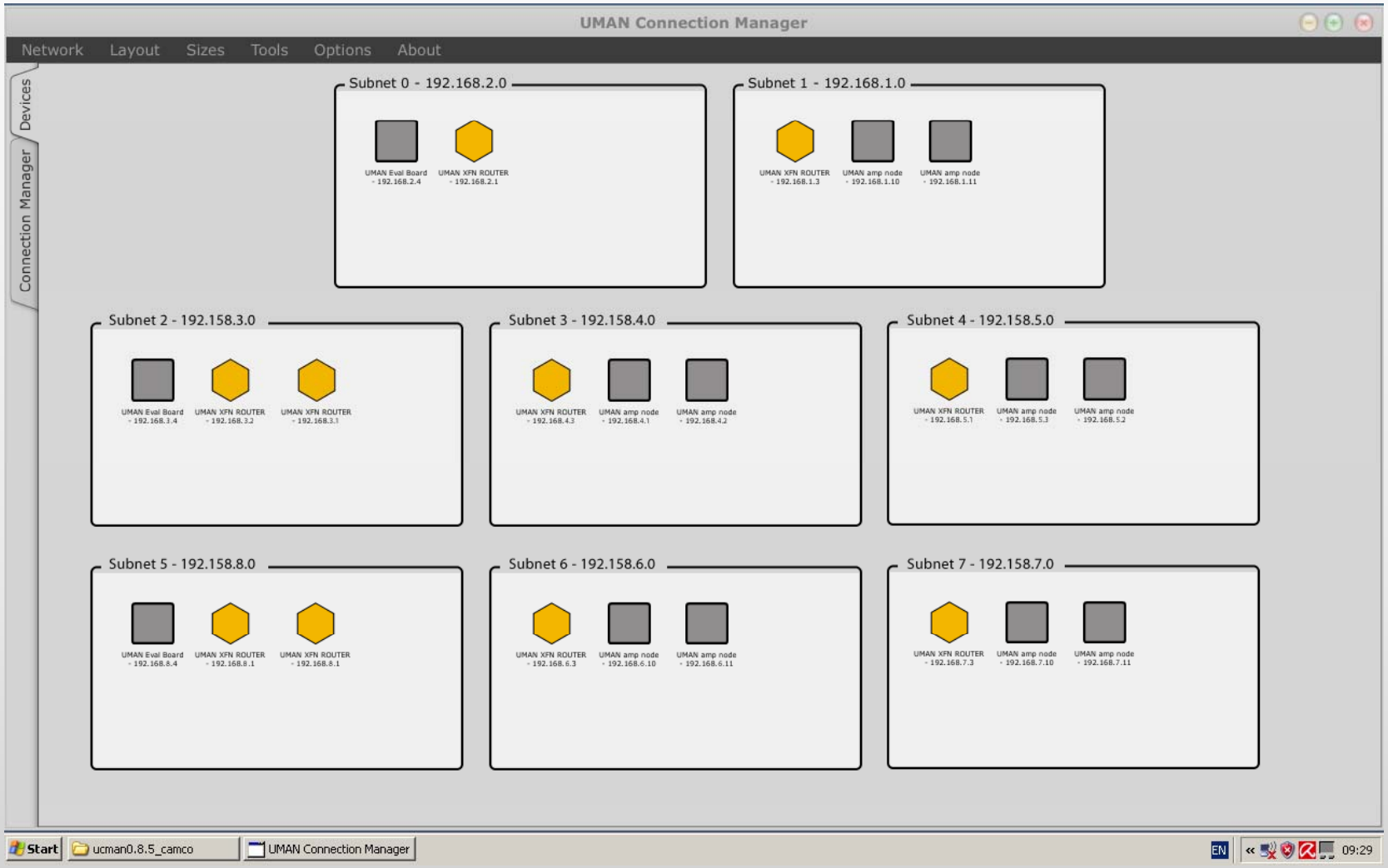


How to handle the setup of a large system?

You need a bridge/router aware

- device discovery mechanism
- a large scale capable general connection management protocol for all devices
- a general command and control protocol to handle simple or more complex system settings
- appropriate routers

How to handle the setup of a large system?



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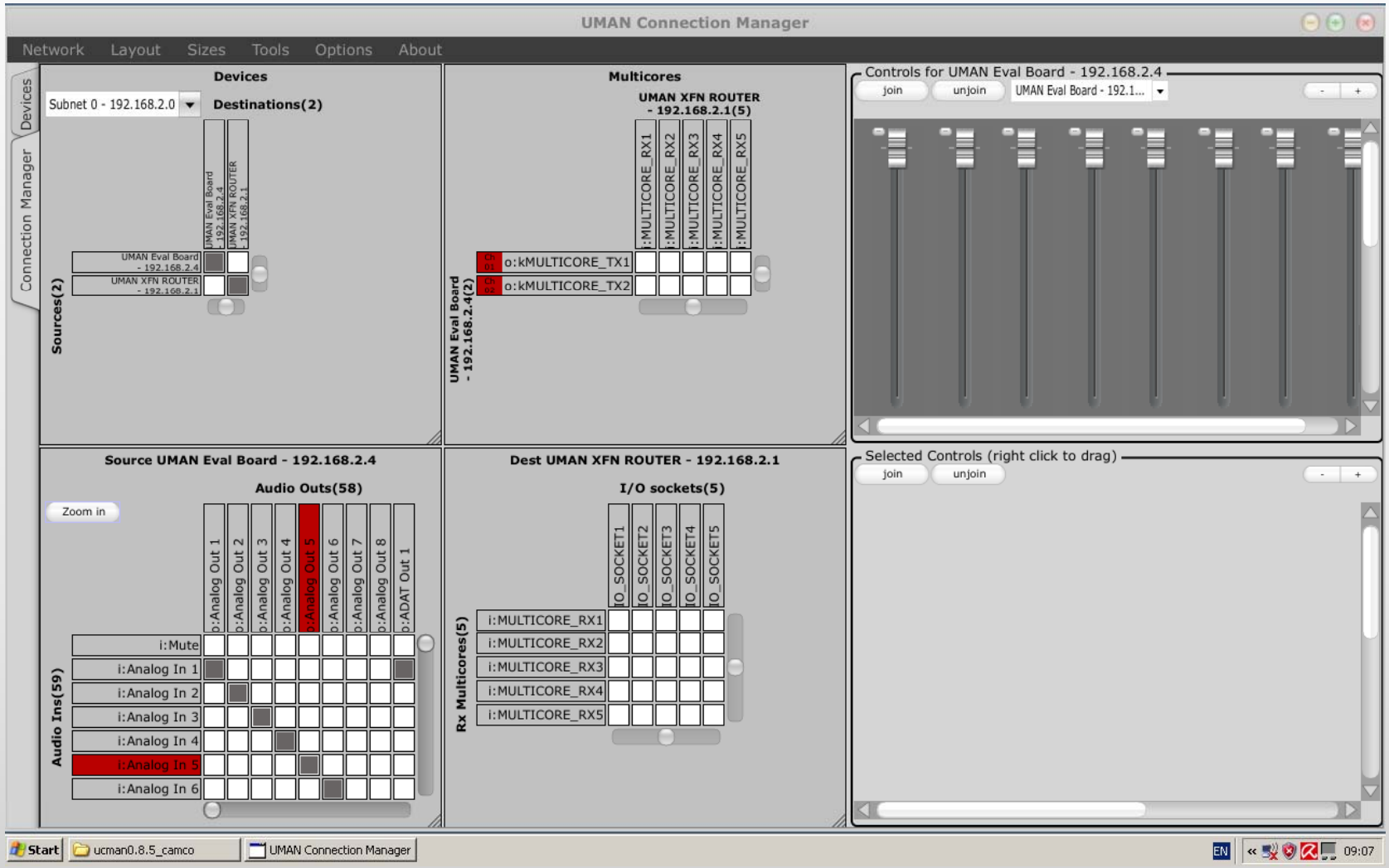
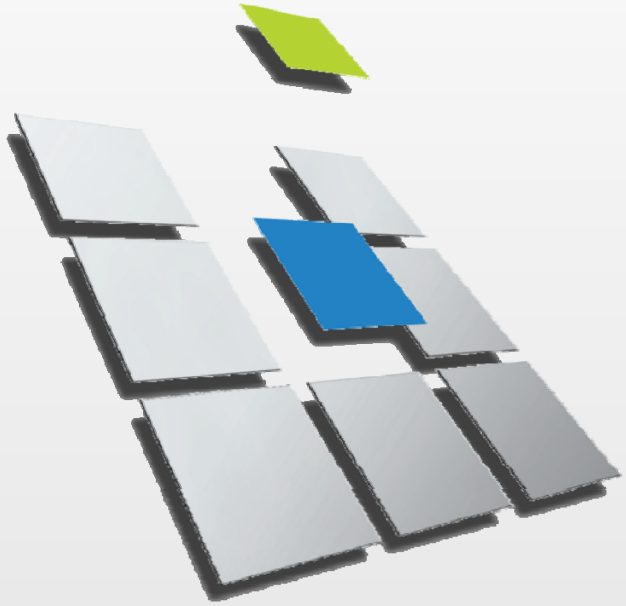


Thank you



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