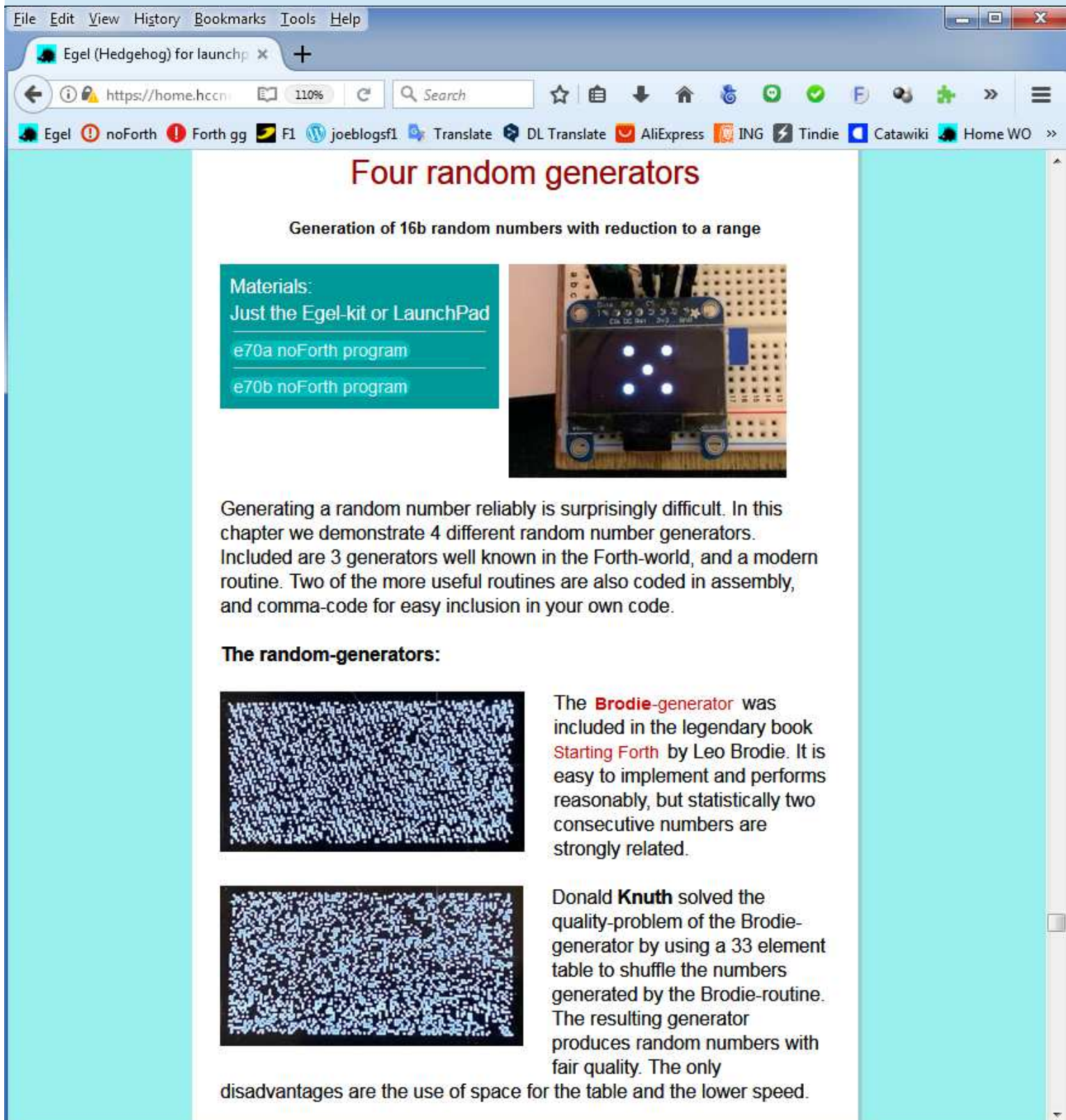


Uitnodiging 13 februari

◆ Nieuws van het Egel project V2



The screenshot shows a web browser window with the following elements:

- Browser title: Egel (Hedgehog) for launchp
- Address bar: <https://home.hccn>
- Page title: Four random generators
- Section: Generation of 16b random numbers with reduction to a range
- Materials list:
 - Just the Egel-kit or LaunchPad
 - e70a noForth program
 - e70b noForth program
- Image: A photograph of an Egel-kit (LaunchPad) with four LEDs lit up.
- Text: Generating a random number reliably is surprisingly difficult. In this chapter we demonstrate 4 different random number generators. Included are 3 generators well known in the Forth-world, and a modern routine. Two of the more useful routines are also coded in assembly, and comma-code for easy inclusion in your own code.
- Section: The random-generators:
- Image: A square of random noise (static).
- Text: The **Brodie-generator** was included in the legendary book *Starting Forth* by Leo Brodie. It is easy to implement and performs reasonably, but statistically two consecutive numbers are strongly related.
- Image: A square of random noise (static).
- Text: Donald **Knuth** solved the quality-problem of the Brodie-generator by using a 33 element table to shuffle the numbers generated by the Brodie-routine. The resulting generator produces random numbers with fair quality. The only disadvantages are the use of space for the table and the lower speed.

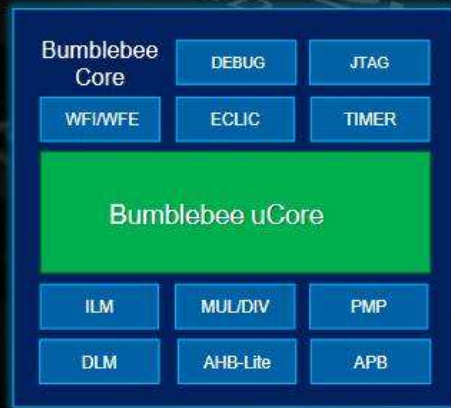
Voorbeeld uit hoofdstuk 70

◆ Risc-V stand van zaken?

Er zijn ondertussen enkele eenvoudige voorbeelden die draaien op **noForth R(C)V**:

Customer Case: GigaDevice GD32V General-Purpose RISC-V MCU

GD32VF103, a 32-bit general-purpose microcontroller, is based on the RISC-V core with an impressive balance of processing power, reduced power consumption and peripheral set. The insided RISC-V core, named Bumblebee, is developed by Nuclei.



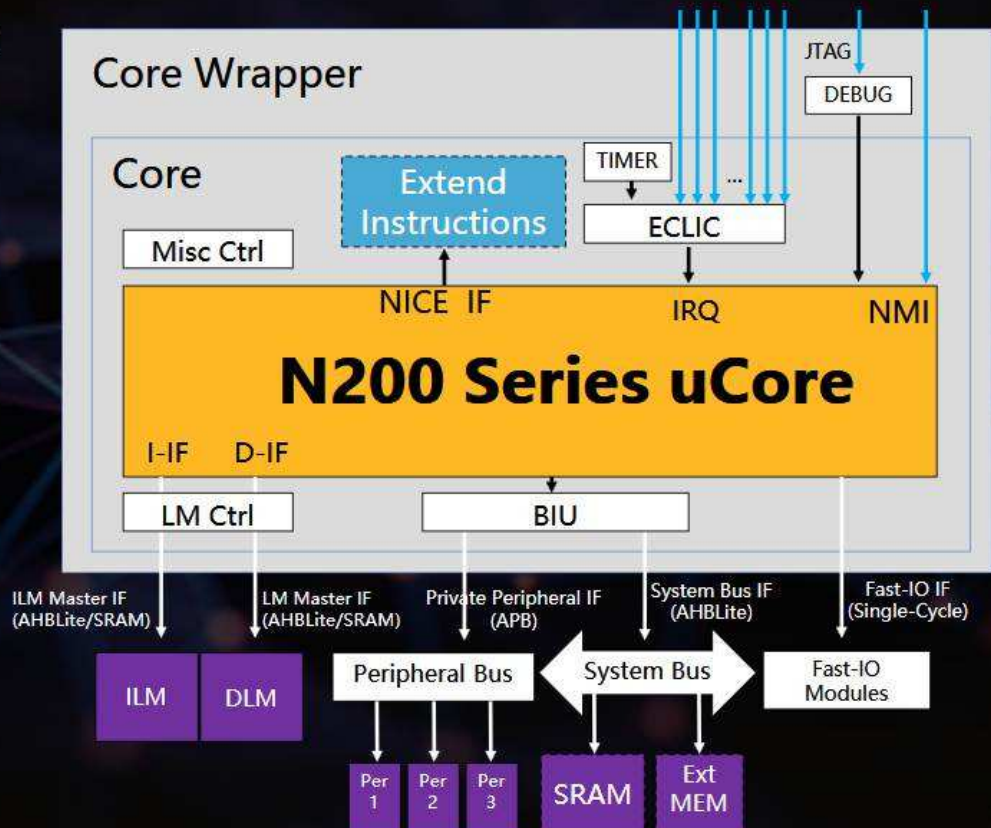
Key features:

- RISC-V RV32IMAC ISA
- Machine mode and user mode
- PMP (physical memory protection)
- 32-bit AHB-Lite System Bus Interface
- 32-bit APB Private Peripheral Bus Interface
- 32-bit ILM and DLM Interfaces
- Standard 4-wire JTAG
- 4 Hardware Breakpoints
- WFI and WFE
- ECLIC (enhanced core level interrupt controller) with 16 interrupt levels & 16 priorities

- Running on the same 108MHz frequency
 - Performance 15% higher*
 - Dynamic current (mA) 50% less*
 - Stand-by Current (uA) 25% less*
- Enhanced I/Os and peripherals
- Maximum efficiency
- Complete program libraries
- Full development toolkit

* Comparisons with GD32F103 (based on ARM Cortex-M3)

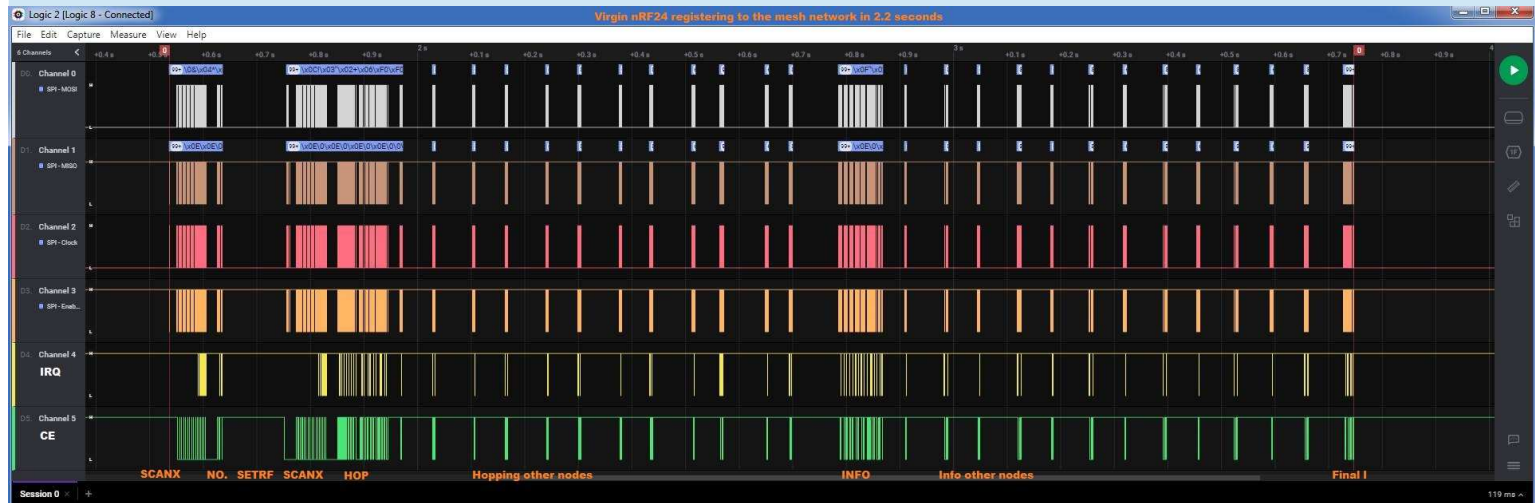
N200 Series Diagram



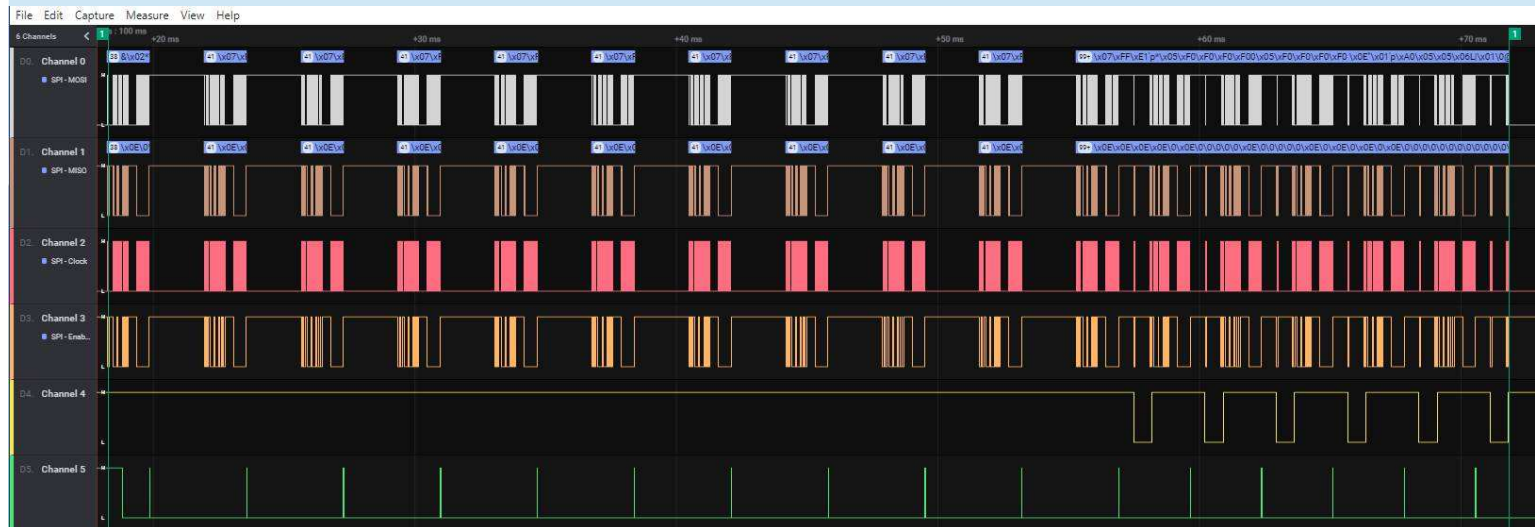
De GD32VF103 gebruikt de Nuclei N205 core

◆ Mesh netwerk met nRF24L01

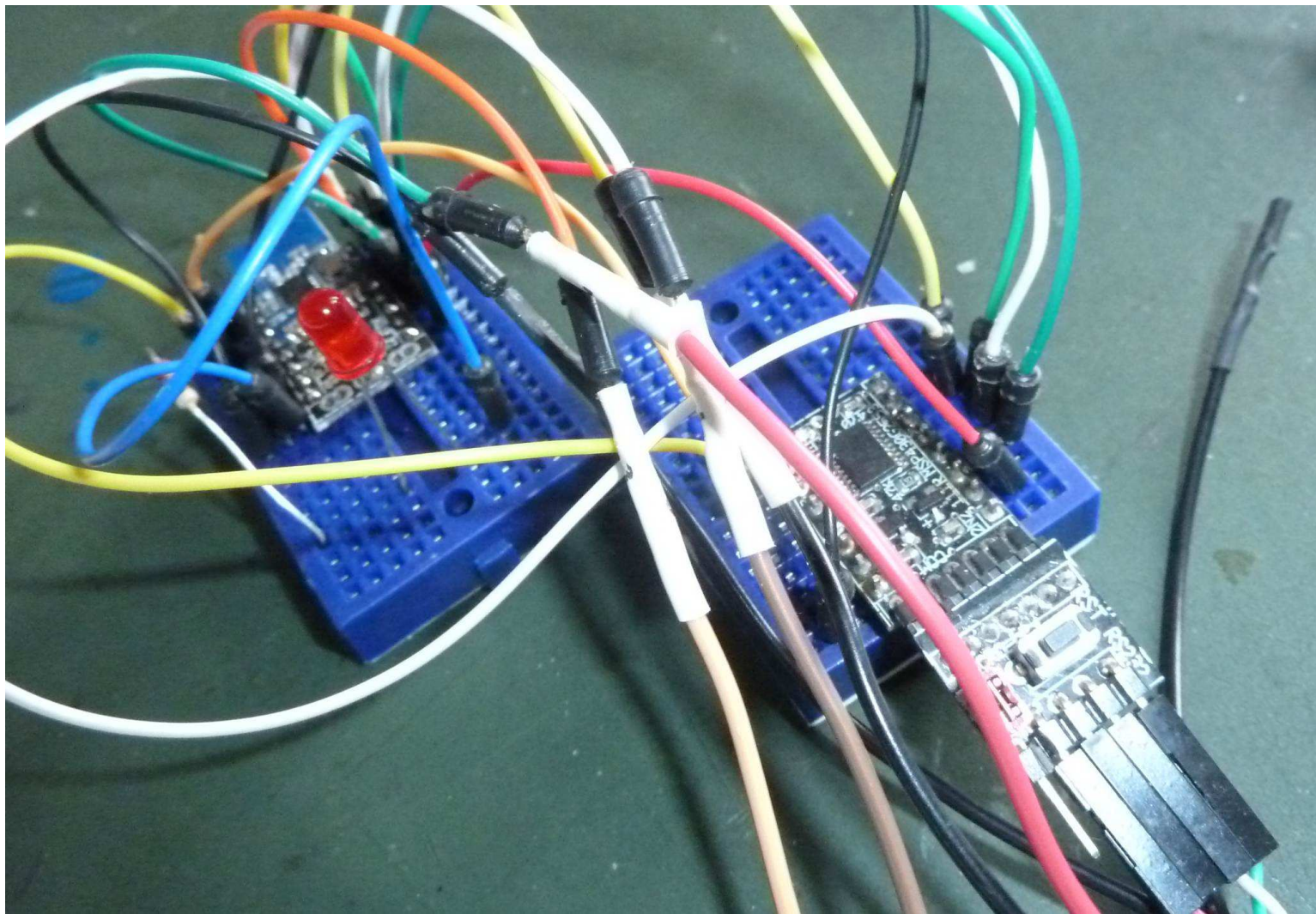
We zijn ondertussen aangekomen bij versie 3.9 van het netwerk. De code is verder opgeschoond en er zijn nieuwe opties toegevoegd.



Het registreren van een nieuwe node



SCANX binnen 70 millisecc.



nRF24 node op MLP met bitbang SPI

Druk nRF24L01+ status af

```

: .DB      ( +n -- ) 3 and -3 + 6 * . ." db" ;
: .BITRATE ( +n -- ) ?dup 0= if ." 250 kBit " exit then . ." Mbit, " ;
: .STATUS  ( -- )
  base @ >r decimal
  ." Node " #me . ." nRF24 "      \ Which node with nRF24
  get-status ?dup if             \ nRF24 not connected?
    0E <> if ." not " then       \ nRF24 not ready?
    ." ok, " rf@ .bitrate        \ Show nRF24 RF settings
    .db ." , Scan " pwr .db
    ." , RF channel = " #ch .
  then r> base ! ;

```

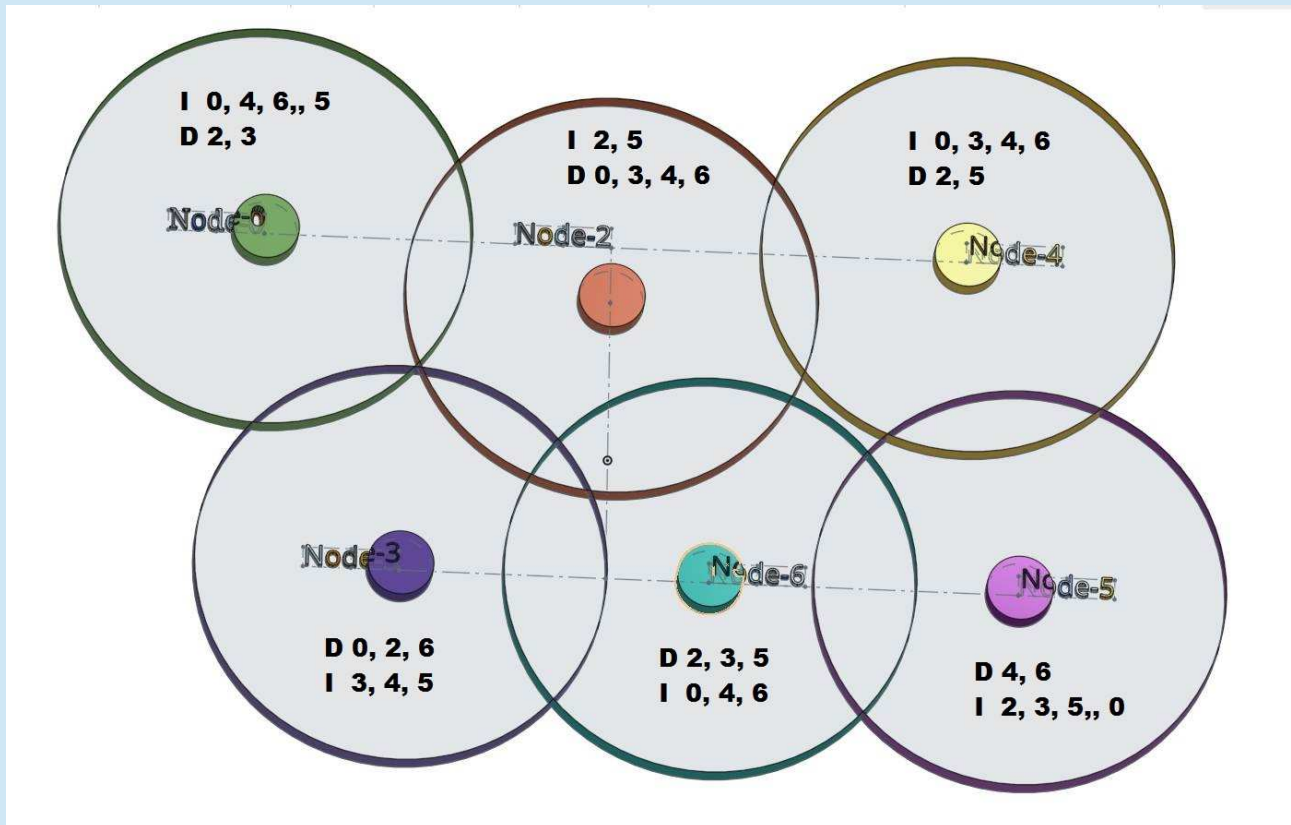
Voorbeeld:

```

@).status Node 0 nRF24 ok, 1 Mbit, 0 db, Scan -12 db, RF channel = 85 OK.0
@)

```

Vraag over de bereikbaarheid nodes



Om het netwerk zo betrouwbaar mogelijk te laten zijn is het handig als er voor een indirecte node een alternatieve route beschikbaar is. De basis routes worden vastgelegd, volgens het principe laagste nummertje eerst.

Van node-0 naar node-2 een alternatief pad maken is eenvoudig. We vragen aan node-3 de bereikbare nodes op, en lezen daaruit dat hij node-2 rechtstreeks kan bereiken. Klaar er is één alternatief gevonden!

Van node-0 naar node-4 en/of node-6 geldt hetzelfde, dat is ook eenvoudig.

Nu is mijn vraag hoe los je dat voor b.v. node-0 en node-5 op?