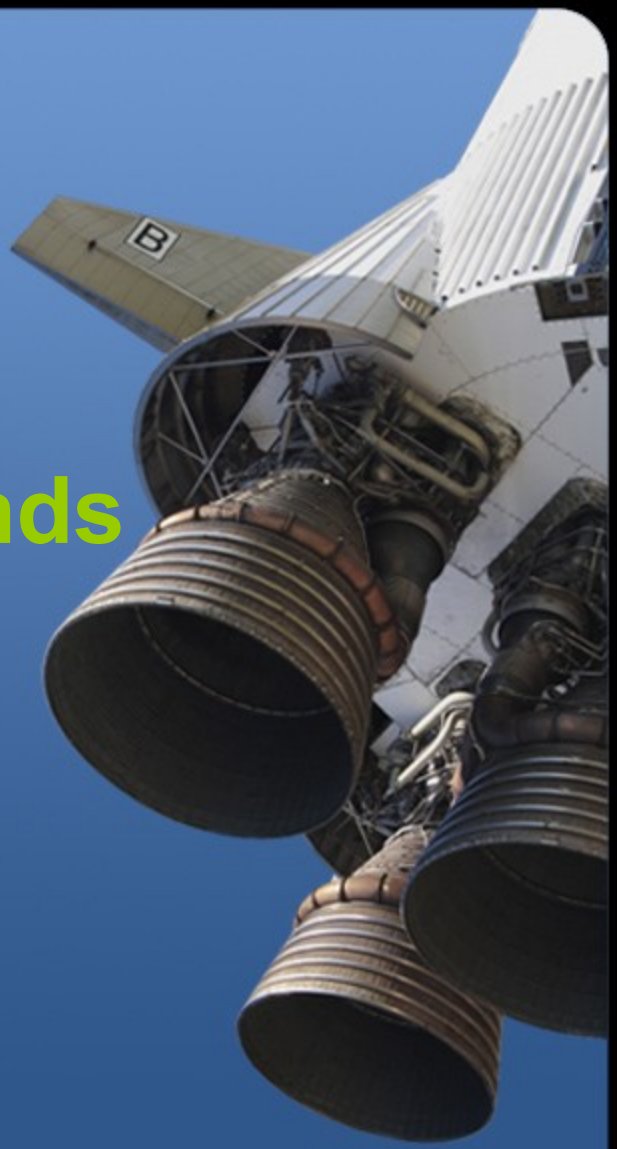
AMPHINICY TECHNOLOGIES

Nothing is Impossible.®

Amphinicy Technologies

SOFTWARE that understands the SATELLITE industry



Zagreb, Geodetski fakultet, October 2014

Agenda

- Amphinicy: the company
- Experience
- Q&A

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Who we are...

About Amphinicy

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About Amphinicy 1/2

- **Software** solutions for the **satellite** industry
- Proficient and **reliable** software **partner**
- **Almost 20 years** (100+ projects) in the satellite industry
- b h:

emergency.lu

UN

SES

Newtec
SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

ND SATCOM BY ASTRIUM

iDIRECT

DLR

SATMANAGE

Sat3Play

esa

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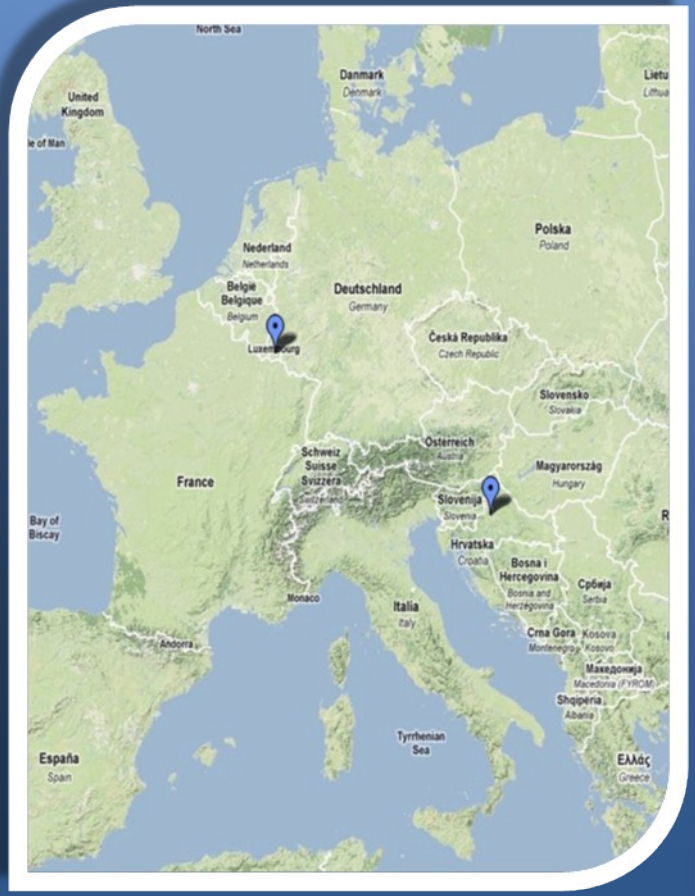
About Amphinicy 2/2

- Locations: Zagreb & Luxembourg
- High-quality and ambitious team of **+30 engineers**
- Project and **Customer** orientation



What kind of software?

Software for satellites

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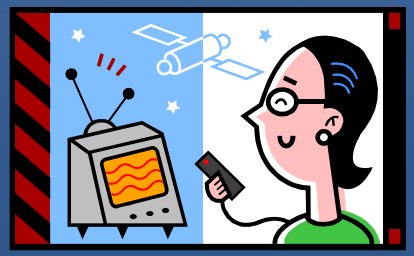
Big picture

- Q: What kind of software?
  - Ground support
  - Media



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Satellite

- Lat. Satelles – attendant / guard - escort
- A body that revolves around another, primary, body
- Purpose:
  - Scientific explorations
  - Weather
  - Communication satellites (bent pipe)
  - Navigation
  - Earth observation
  - Military / Espionage

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Case #1 - IOT

- Launch → vibrations, atmosphere
- Park orbit → Test
- Final orbit → Test
- System for In-Orbit testing!

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IOTS Screenshots

SatelliteTestCockpit 200704122300

File Edit View Navigate Tools Window Help

AdminClient Window

Launcher | Server | Advanced

Server	State
MeasServer	-
SimCsmServer	-
LogServer	-
DataServer	-
WebReport	-
WebAdmin	-
FormulaServer	-
FormulaServ...	-
MCServer	-
ACUServer	-
PM1	-
PM2	-
PM3	-
SA	-
SYNTH1	-
SYNTH2	-
FG	-
DM	-
HPA1	-
HPA2	-
TLT1	-
TLT2	-
UpConverter1	-
UpConverter2	-
DownConver...	-
MLA	-
SimServer	-
Simulator	RUN
OrbitalInfor...	-

Select All | Select None | CheckState | Launch Server(s) | Stop Server(s)

Output - TestSystems

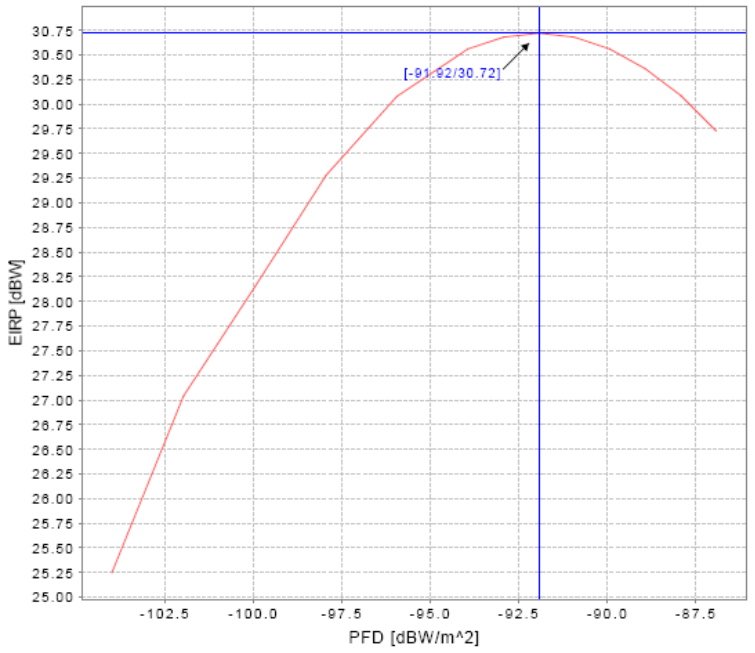
```
PM1 value = 2.61
Pfd(meas) calculation : PM1 + Gtcab - Gtco + Gat - Att - SL - 30
Uplink PFD = -87.93
SYNTH1 : power level set to : -22.09
Store PFD, EIRP and power level values in the report
```

TRANSFER CURVE

DURATION	4 min 14 s	GROUP ID / TEST ID	21069 / 31162
TRANSPONDER	C1	RECEIVER	SIM RECV 1
GCA	12.00 dB	DLA_MODE	Linear
CHANNEL_NAME	SIM_CH1	FCA	10.00 dB
U/L FREQUENCY	13014.250 MHz	U/L POLARIZATION	V
D/L FREQUENCY	10964.250 MHz	D/L POLARIZATION	V
RADIOMETER	No	ACU CONTROL	Yes [0.0 dBm]
U/L ATM ATT	0.00 dB	D/L ATM ATT	0.00 dB
DLATWTA	1	TELEMETRY ACCESS	Yes [4 s]

EIRP AT SATURATION	30.72 dBW	FTS AT SATURATION	-91.92 dBW/m^2
MOD AT SATURATION	-37.73 dBm	TRANSLATION FREQ	2050.000000 MHz
BACKOFF	-20.00 dB		

EIRP vs. PFD



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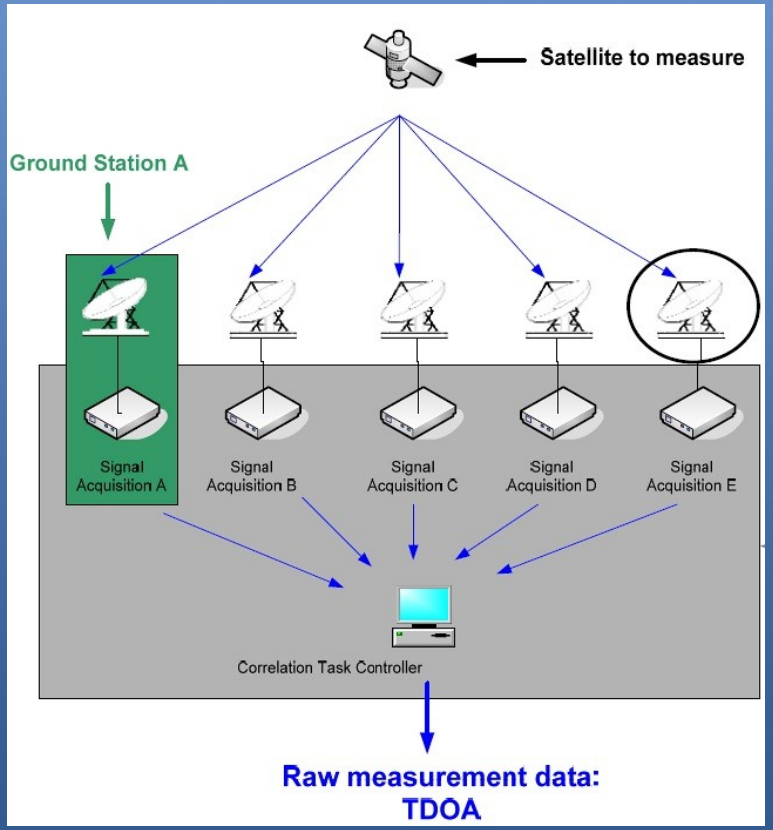
Case #2 – Satellite Ranging

- Reversed GPS
- First of a kind

- London, Kiruna, Gibraltar, Betzdorf, Munich

- Configuring the system to range a satellite



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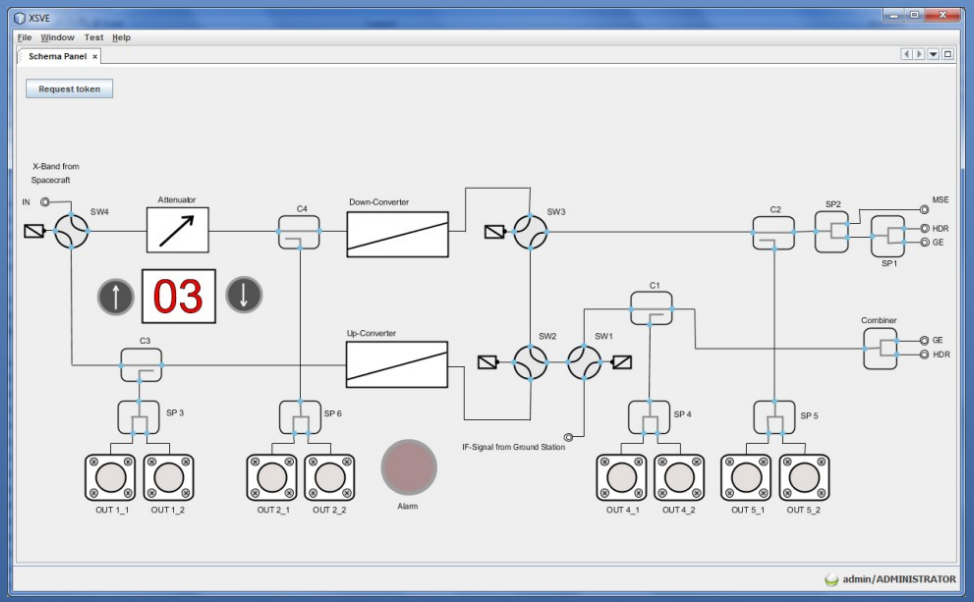
Case #3 – Telemetry Analysis

- Earth observation
  - Copernicus:
    - Sentinels 1-5
    - EarthCARE



- Used for
  - Assembly (AIV)
  - Commisioning

- Debugger for EO telemetry
- Challenges: real time processing (800 MB/sec)

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Case #3 – Telemetry Analysis

- Result – idea for Blink
- Ultra fast parser
- Recognized as innovative PoC idea by

BICRO
Poslovno - inovacijski centar Hrvatske
Business Innovation Center of Croatia

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Case #4 – Monica

15+ years

SES/ESA projects

M&C abstraction

- Earth observation
- Reverse sat. positioning
- Upcoming projects

EXPERIENCE

- Simulators
- Alarming
- RF Equipment interfacing
- Scripting...

MONICA

M&C **framework** – solid base for future systems

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Case #4 – Monica

monica

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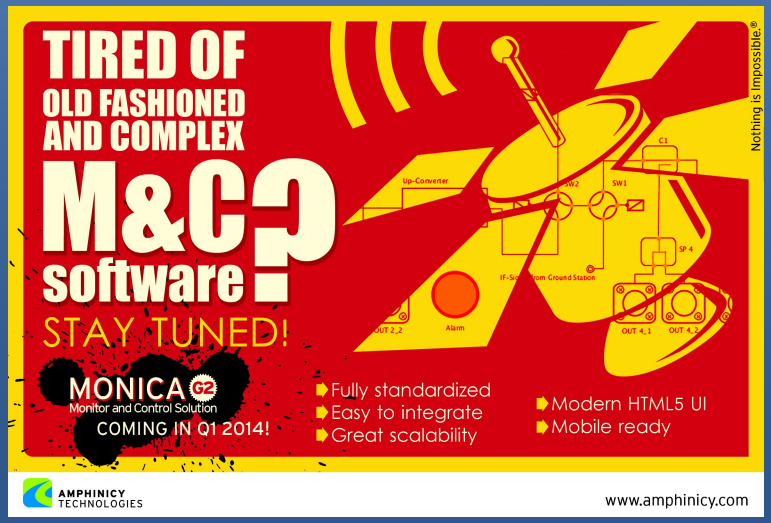
Case #4 – Monica

- Result – innovative solution recognized by

Ministarstvo poduzetništva i obrta
MINPO



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Case #5 – Space Mirror

- Solves the biggest issue with LEO satellites
- Laser link to GEO sat – always-on communication

- Software for MOC

- MOC Monitor and Control
- Simulator of the whole system
- Billing subsystem

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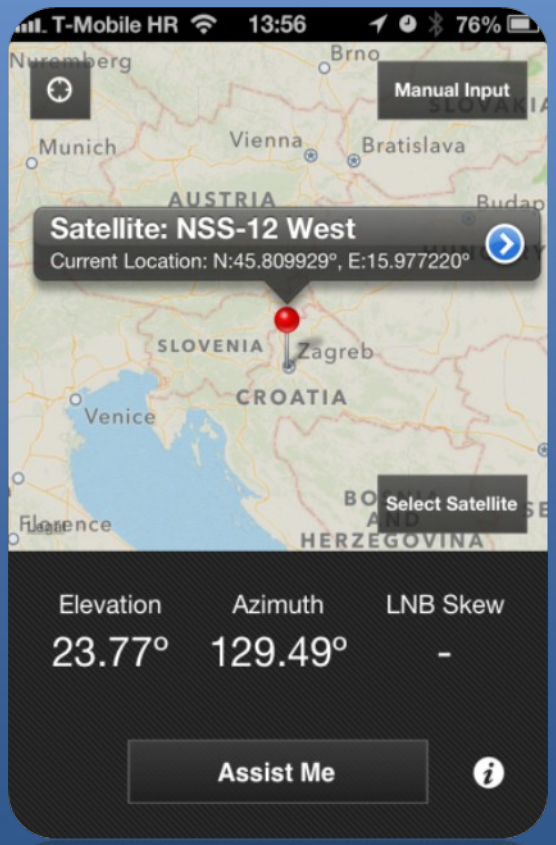
Case #6 – Emergency.Lu Mobile apps

- Disaster recovery system
- Mobile applications
- Automated Line-up application
- VoIP application
- Multi platform native apps



Any questions? …

Thanks!