IRIS

(Integrated Railway Information System)

The CFR IT system

AGENDA

- Romanian Railways – IT Subsidiary ''Informatica Feroviara''

- System for traffic management

Informatica Feroviara
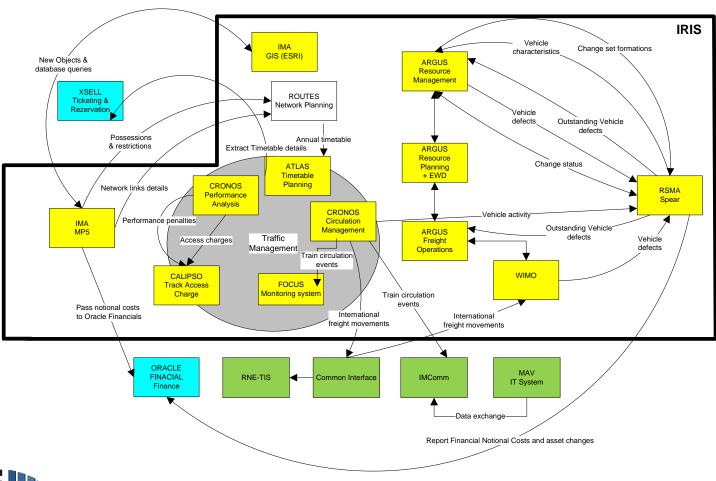
One of the biggest player on the Romanian IT Market

➤ **50** years of IT systems and technology for railway business, tailored and always modern vision.

➤ Continuous service and knowledge for better customer services.

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IT Systems – strategic approach

System for traffic management

Railway Undertakings (RUs)

- **ATLAS- RU** – operational plan update application

- **FOCUS – RU** - Train monitoring application

- **INFO-RU -** Information for RUs

System for traffic management

Infrastructure Manager (IM)

- **ROUTES** – Timetable application

- **Atlas- IM** -   Operational plan update and running train performance analysis

  CRONOS - Reporting of running train application

- **FOCUS** - Monitoring of running train application

- **CALIPSO** - Track Access Charge application

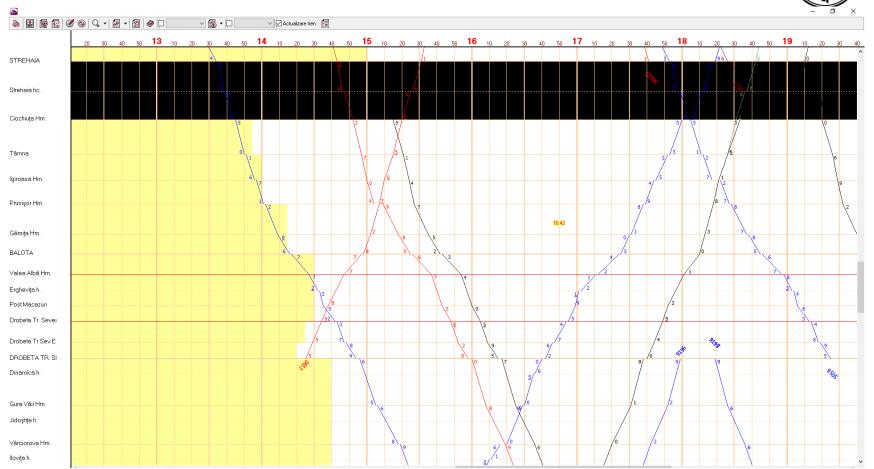INFORMATICĂ FEROVIARĂ

ROUTES

- Yearly timetable application

- All the path technical characteristics can be defined (or modified): brake percentage, maximum speed, running time, stopping time, length, tonnage, etc.

- Interface with ATLAS-IM

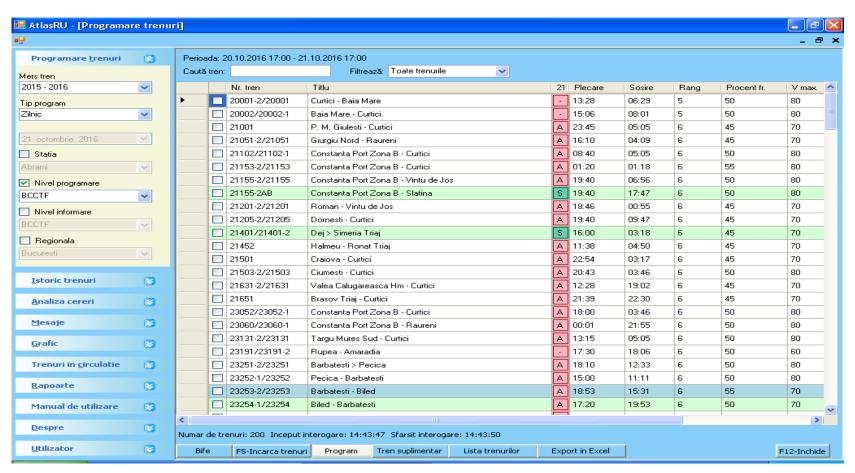- Sends the paths to ATLAS-IM

ROUTES

ATLAS-RU

- Receive all the paths from ATLAS-IM

- RU can send path request messages to ATLAS-IM

- NOT all the path technical characteristics can be modified: only stopping time, length, tonnage and text

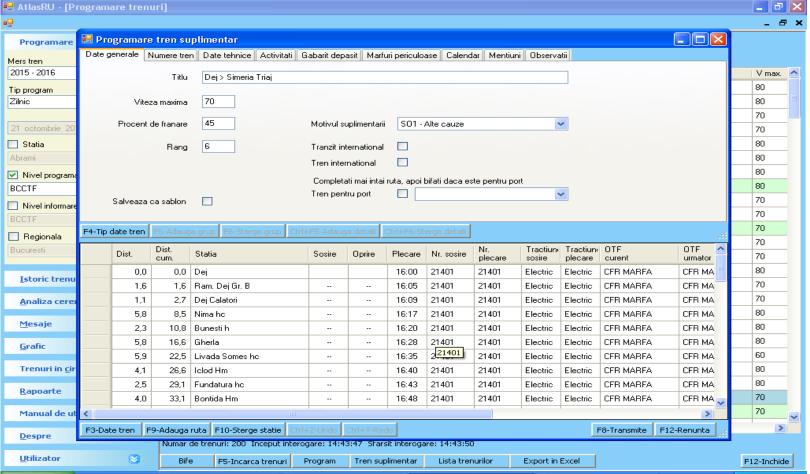- The brake percentage, maximum speed and running time are **unchangeable**

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ATLAS-RU

ATLAS-RU

- A path can be modified:

  - ○ Shortened on the beginning

  - ○ Shortened on the end

  - ○ Linked with another path on the booth ends

ATLAS-RU

ATLAS-RU

- TAF-TSI messages used:

  - Path request

  - Path details

  - Path accepted

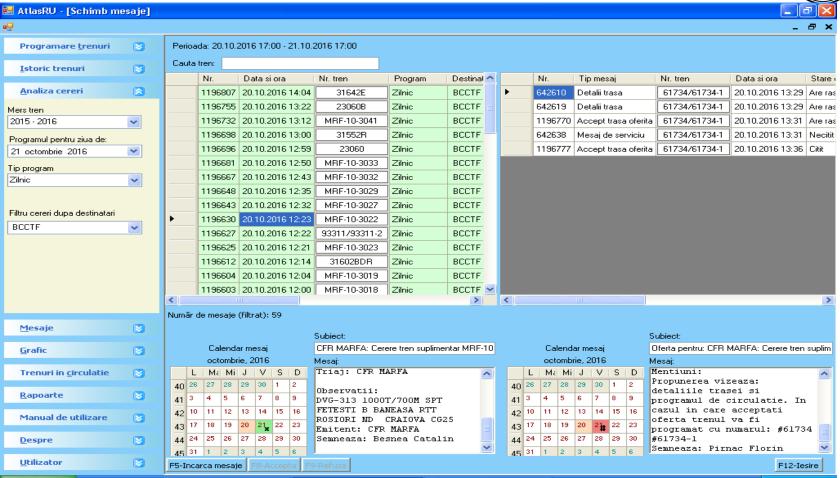 - Path refused

  - Path confirmed

ATLAS-RU

- Application reports about:

  o Operational plan updates: number of running trains, paths length, the list of the trains

  o Train's cancelation: number of canceled trains, cancelation causes, paths length, the list of the trains

  o Train's delays: number of delayed trains, delay's causes
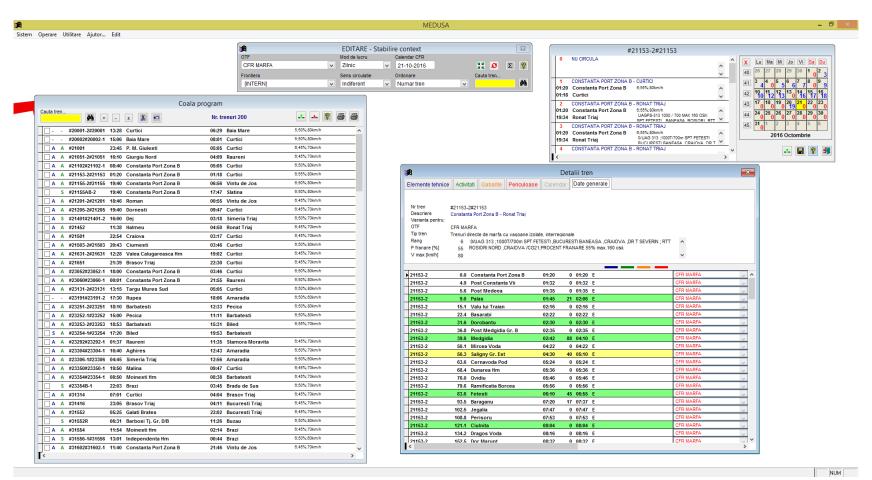
ATLAS-RU

ATLAS-IM

- Receives all the paths from ROUTES

- Receives path request messages from ATLAS-RU

- NOT all the path technical characteristics can be modified: only stopping time, length, tonnage and text

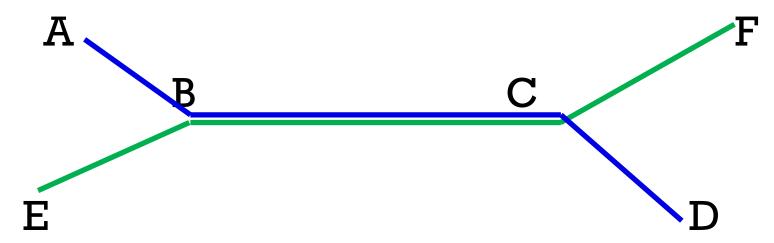- The brake percentage, maximum speed and running time are **unchangeable**

ATLAS-IM

ATLAS-IM

- A path can be modified:

  - Shortened on the beginning

  - Shortened on the end
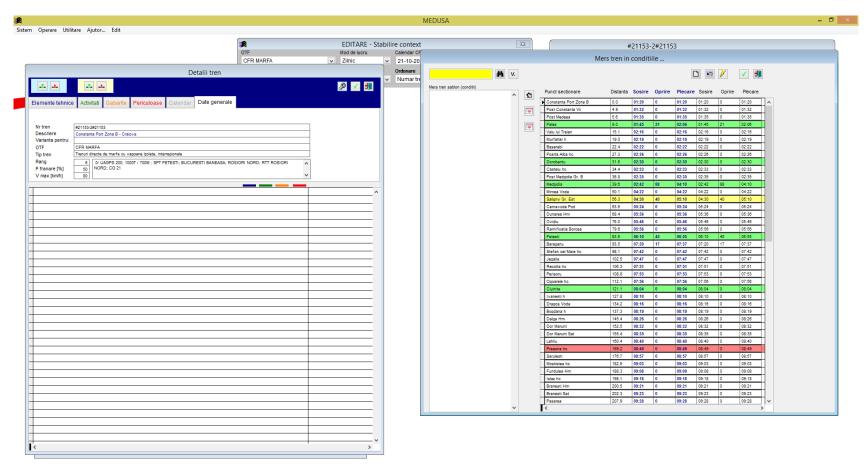
  - Linked with another path on the booth ends

ATLAS-IM

- The initial path: A – B – C – D

- The modified path: E – B – C – F

ATLAS-IM

ATLAS-IM
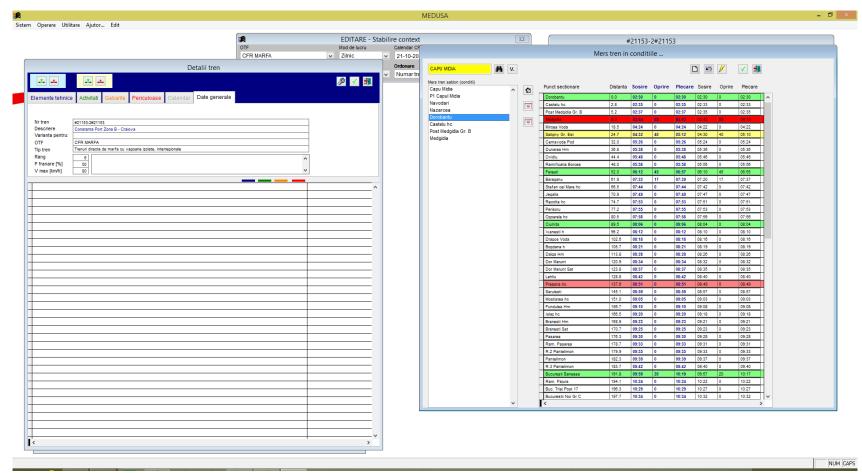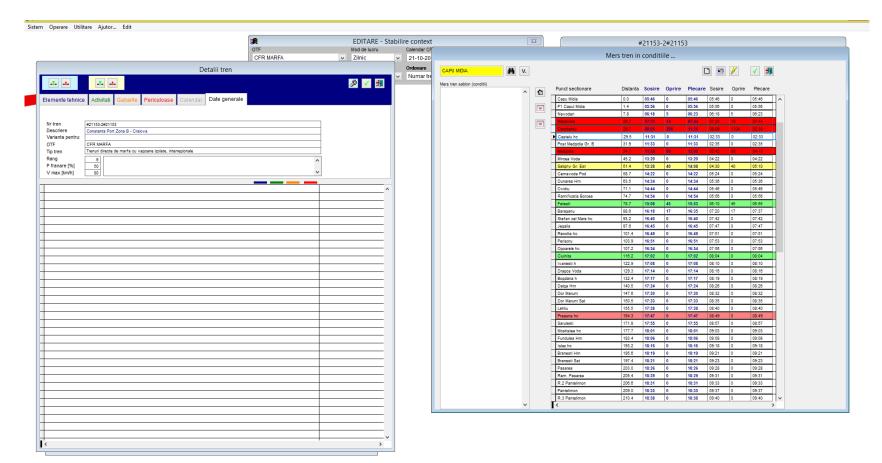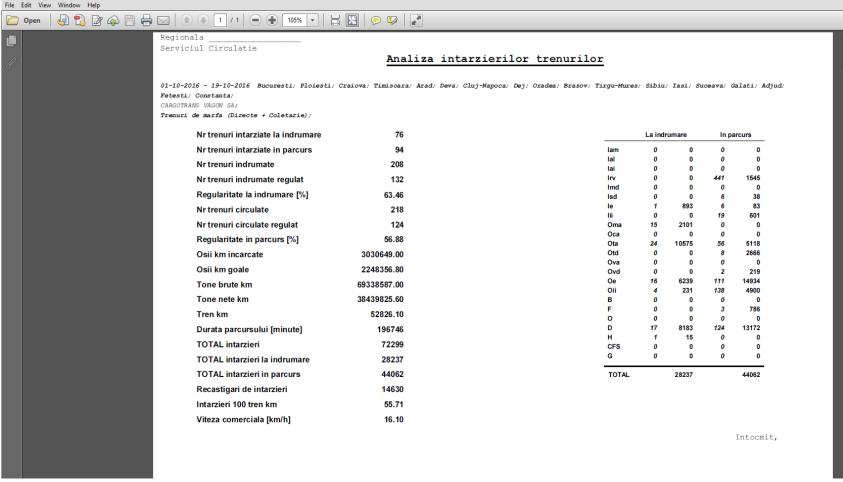
ATLAS-IM

ATLAS-IM

- Application gives reports about:

  - Operational plan updates: number of running trains, paths length, the list of the trains

  - Train's cancelation: number of canceled trains, cancelation causes, paths length, the list of the trains

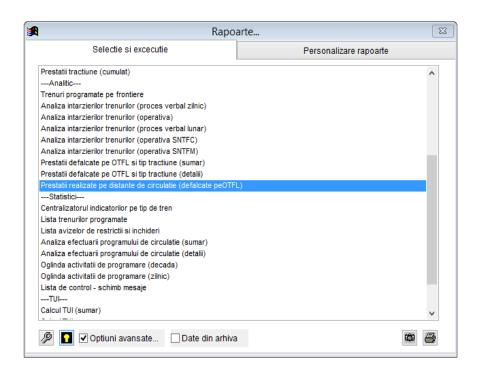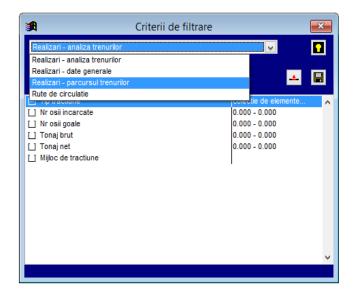 - Train's delays: number of delayed trains, delay's causes

ATLAS-IM

ATLAS-IM

ATLAS-IM

	den_otfl	den_ruta	km	tr_indr	tr_circ	oikm	ogkm	tnkm	tbkm	km_ok	min_mers	min_stop	v_th	v_com
1	den_otfl	den_ruta	km	tr_indr	tr_circ	oikm	ogkm	tnkm	tbkm	km_ok	min_mers	min_stop	v_th	v_com
2	CFR MARFA	Curtici : Deda	256	7	6	780	19651,2	9846,1	125428	250,4	758	23	19,8	19,2
3	UNICOM TRANZIT	Curtici : Deda	67	1	2	9281,6	166,4	119119,6	171951,8	59,7	106	0	33,8	33,8
4	GRUP FEROVIAR ROMAN SA	Curtici : Deda	420,3	14	7	13518,4	16669,6	118918,8	301530,8	365,9	685	187	32	25,2
5	TRANSFEROVIAR GRUP SA (M)	Curtici : Deda	6,6	1	1	0	0	0	0	6,6	11	0	36	36
6	CARGOTRANS VAGON SA	Curtici : Deda	135,8	2	1	13351,6	0	178405	249767	122,1	198	75	37	26,8
7	DB CARGO ROMANIA	Curtici : Deda	75,7	3	2	34	1012	272	7834,7	64,7	93	6	41,7	39,2
8	CONSTANTIN GRUP SRL	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
9	VIA TERRA SPEDITION SRL	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
10	REGIOTRANS SRL	Curtici : Deda	149	5	5	0	1192	0	11920	116,5	132	47	53	39,1
11	TRANSFEROVIAR CALATORI SRL	Curtici : Deda	456,3	3	3	0	3650,4	0	36504	445,2	476	126	56,1	44,4
12	RAIL FORCE SRL	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
13	MAV-START	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
14	Vest Trans Rail SRL (M)	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
15	Rail Cargo Romania SRL (M)	Curtici : Deda	17	1	1	1020	884	11067	25466	9,7	16	0	36,4	36,4
16	CER-FERSPED	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
17	Tehnotrans Feroviar SRL	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
18	IRT Timisoara	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
19	INTERREGIONAL CALATORI SRL (C)	Curtici : Deda	364,8	2	4	0	2918,4	0	29184	358,8	458	90	47	39,3
20	SOFTRANS CALATORI SRL	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
21	Tim Rail Cargo	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
22	LTE RAIL ROMANIA	Curtici : Deda	17	1	1	1632	0	17544	26928	9,7	27	0	21,6	21,6
23	MMV RAIL ROMANIA	Curtici : Deda	165,4	3	1	14268,8	2244	189198,8	285294,8	155	415	0	22,4	22,4
24	TEF Logistica	Curtici : Deda	0	0	0	0	0	0	0	0	0	0	0	0
25	CN CFR SA	Curtici : Deda	160,8	7	3	0	1286,4	0	9808,8	160,8	231	0	41,8	41,8
26	SNTF Calatori	Curtici : Deda	5588,8	57	36	0	84525,6	0	1062869,4	5440,6	6490	1437	50,3	41,2

ATLAS-IM

- ATLAS-IM sends all the paths to CRONOS:

  - Every day, after the daily operational plan update

  - In very short term, for instant trains the message is sent **immediately**

  - ATLAS-IM also sends all the approved paths to ATLAS-RU

CRONOS

- Application for real train passage in stations reporting:

    - Receives paths from ATLAS-IM in each reporting station.

    - Manual data input: the signalers report the train arrival, departure or passing times, as they occur.

    - The reasons for delays are also reported.

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CRONOS

CRONOS

- Automatic data input:

    o Where CFR has rehabilitation works, the CTCs are connected with CRONOS using an interface

    o The CTC receives the paths from ATLAS

    o The CTC sends the real passage of trains to CRONOS
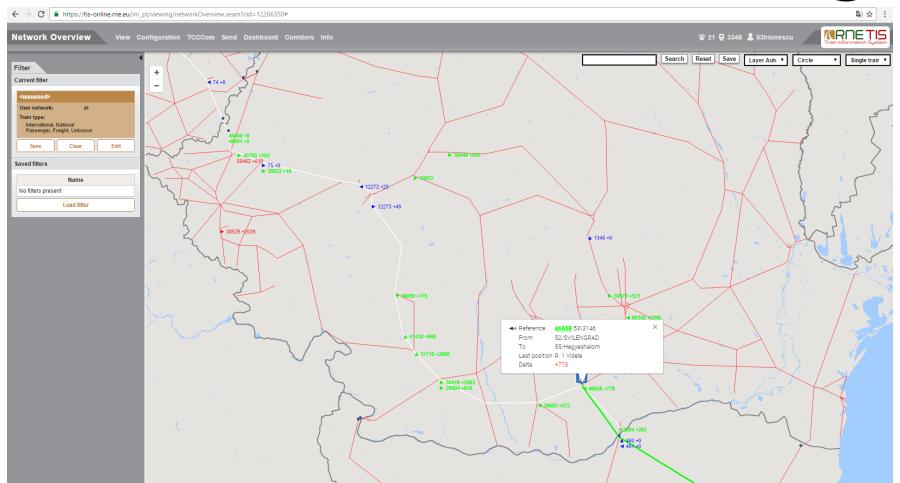
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CRONOS

- CRONOS sends the real passage of the running trains and the delay's causes to:

  o FOCUS, for traffic monitoring

  o ATLAS-IM, for statistical reports

  o CALIPSO, for the using track fee

  o INFO-IM/INFO-RU, for CFR and RUs information and statistical reports

  o TIS (only international trains)
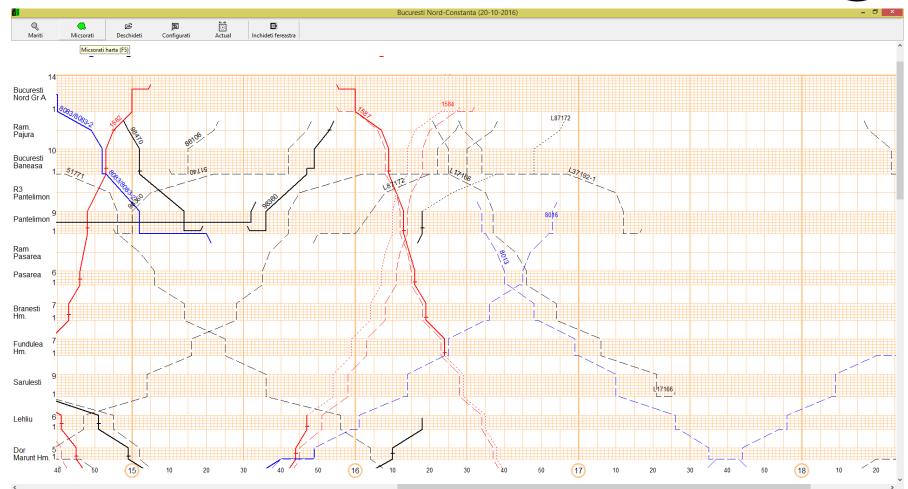
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TIS

FOCUS

- The application is used to show in real time the running trains

- The information can be displayed in many forms:

    o Space – time diagram

    o On a schematically map

    o On a station's layouts

    o On a scrolling list

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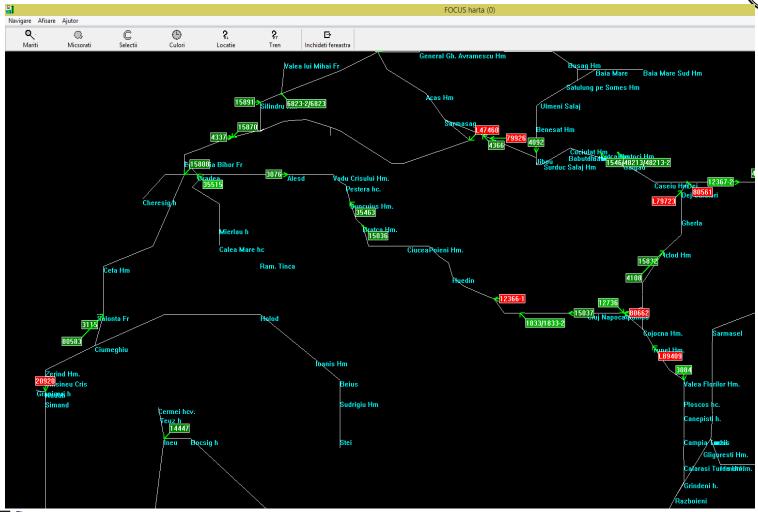
FOCUS

FOCUS

FOCUS
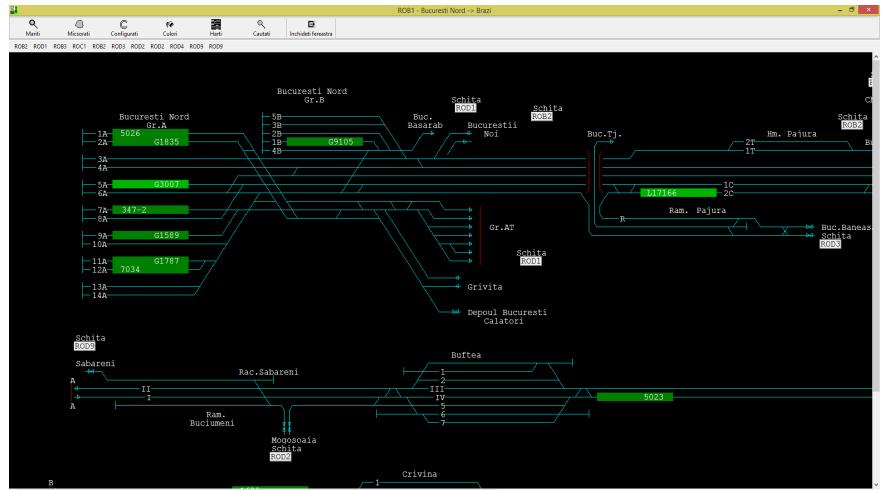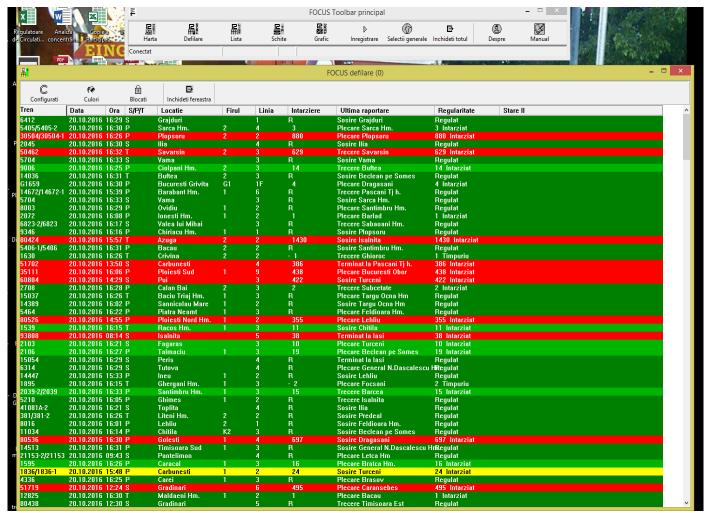
FOCUS

CALIPSO

- Application for Using Track Charge (fee) automatic calculation

  - It is based on real passage of the running train reporting massages received from CRONOS. After the signaler reports the train arrival in the destination station CRONOS server sends a message regarding train path and gross tonnage to CALIPSO.

  - In CALIPSO each train data can be reviewed and modified by an accepted user before an invoice is emitted.

  - The application has it's own constant dataset – railway network data, tariffs, accepted RUs

Analysis and statistical reports
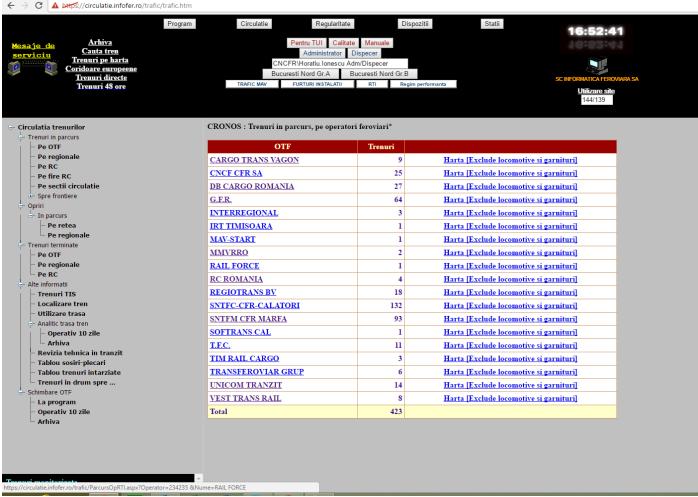
- All data inside IRIS system are available in real time (online, based on controlled acces) on a dedicated web page for:

    o IM (CFR) can see all the trains

    o RUs – every RU can see only trains operated by itself

    o Passengers (only passengers' trains)

INFO-IM

INFO-RU
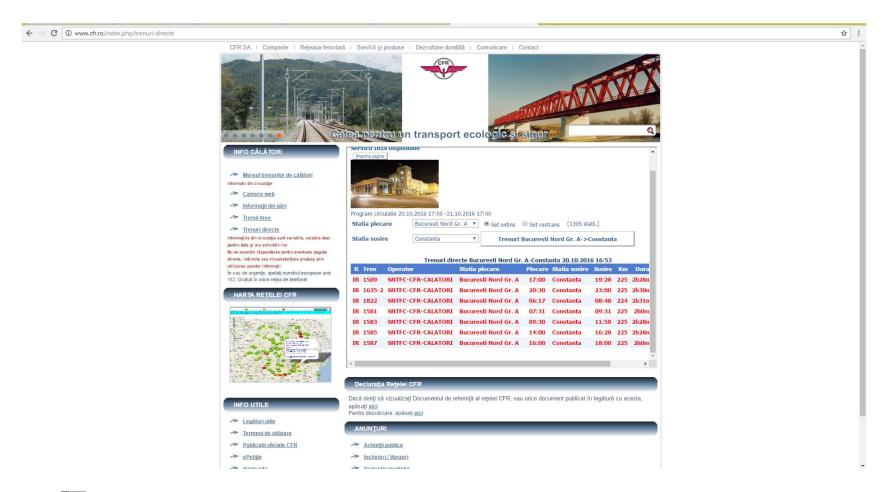
Information for passengers

Performance regime

- Specific part of Analysis and synthesis reports

- Highlights indicators concerning delays from either operative or archived data

Business Inteligence for Traffic management

- A datawarehouse was developed and implemented

- A BI prototype was implemented

- A professional BI solution – in progress

International systems

- An exchange messages aplication between CFR and MAV IT systems, named **IMComm**

- Implemented and working Common Components
  - Common Interface
  - Common Repository Database

- Train Information System **TIS**
  - 2002 and 2090 messages are already implemented
  - 2005 message in progress

- WIMO database according TAF – TSI specifications
  - Contains technical and administrative wagon data
  - Commercial and events data in progress

IMComm
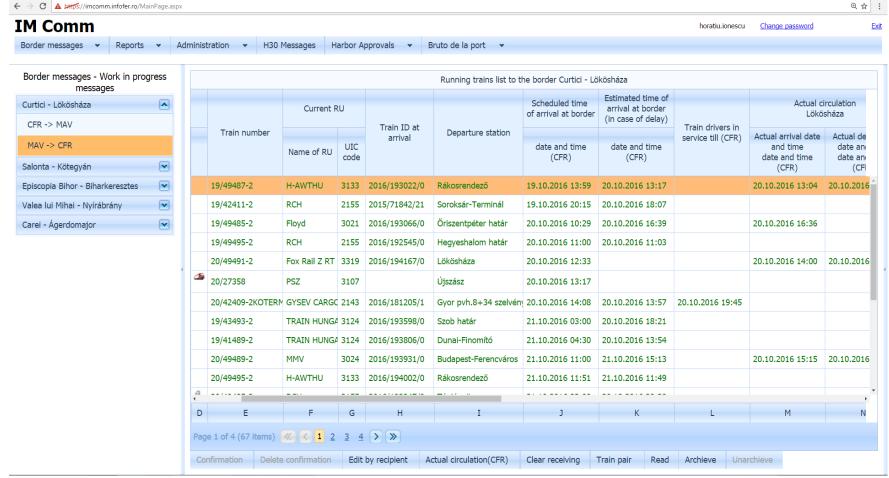
- It is a multilingual IT tool dedicated for ad-hoc and instant freight trains

- Based on an interface with Hungarian and Romanian IT systems the tool makes the connection between international trains at all common borders

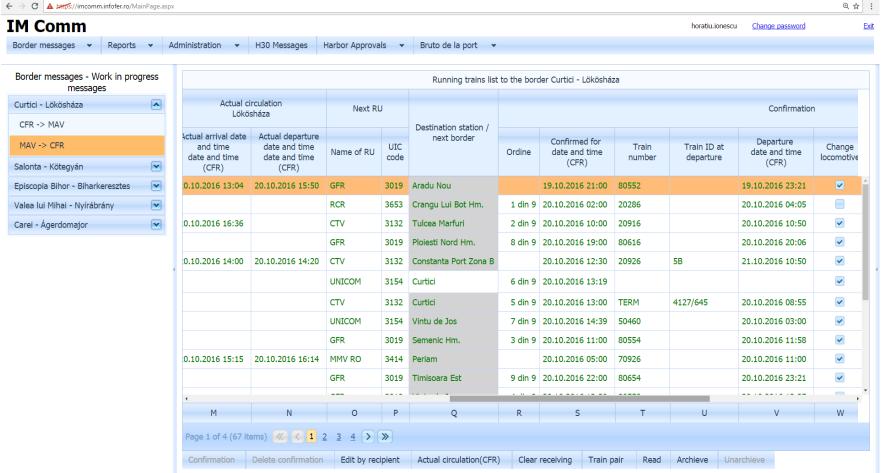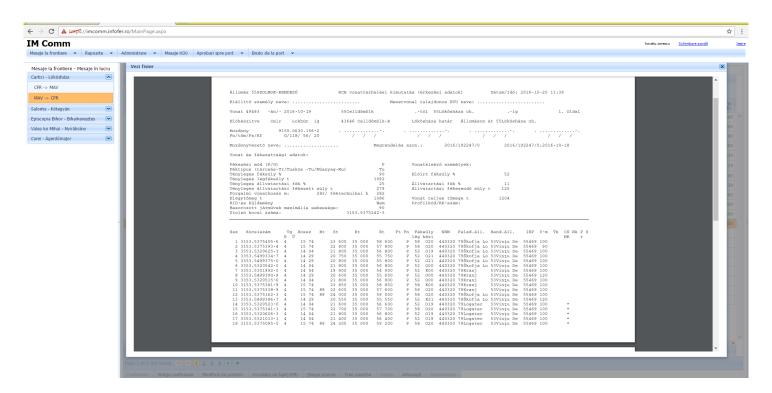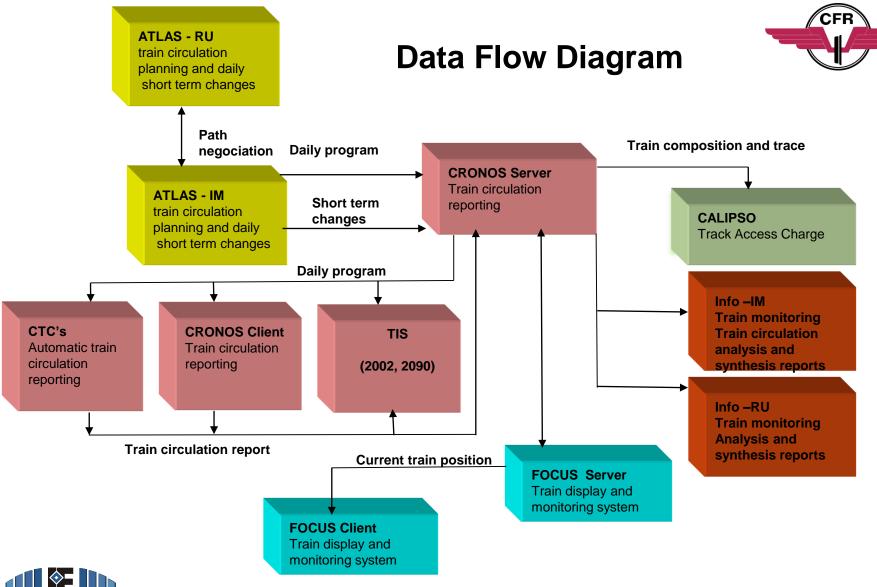- The tool can be developed on the other borders (between different IMs)

IMComm

IMComm

IMComm

An RU can insert a file in order to send information to his neighbor partner – next RU (e.g. a train list composition)

IRIS Model System - Circulation

Data Flow Diagram

ATLAS - RU
train circulation planning and daily short term changes

Path negociation

Daily program

ATLAS - IM
train circulation planning and daily short term changes

Short term changes

CRONOS Server
Train circulation reporting

Train composition and trace

CALIPSO
Track Access Charge

Daily program

CTC's
Automatic train circulation reporting

CRONOS Client
Train circulation reporting

TIS
(2002, 2090)

Info –IM
Train monitoring
Train circulation analysis and synthesis reports

Info –RU
Train monitoring
Analysis and synthesis reports

Train circulation report

Current train position

FOCUS Server
Train display and monitoring system

FOCUS Client
Train display and monitoring system

CFR

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Future developments

Informatica Feroviara developed new software products in the rehabilitation of Corridor IV project:

- An application that shows the position of trains reported by GPS technology on a geographical map, named **IRIS-GPS Reporting Trains**

- **IRIS - TMS interface** – an interface between IRIS system and Alstom's CTC system, named TMS (Traffic Management System)

- **IRIS – DCOS** (hot axel boxes detector) interface

Thank you!

Questions and Answers