

ATDI

ICS manager/eManager Spectrum Management Solution

ATDI Group
11 boulevard Malesherbes
75008 Paris, FRANCE
contact@atdi.com
Phone: +33 1 53 30 81 41

www.atdi.com

Today's Agenda

- 1 **Introducing ATDI**
- 2 **Spectrum-sharing strategy: Area-wide apparatus licenses (AWLs) in 26-28 GHz**
- 3 **ICS Monitoring-SDRN Control**
Integrated spectrum monitoring and big data control
- 4 **ICS RF Allocations**
Creating and publishing Frequency allocation tables
- 5 **Q&A**

About Us

RADIO NETWORK PLANNING AND MODELLING, SPECTRUM MANAGEMENT AND OPTIMISATION SOFTWARE SOLUTIONS

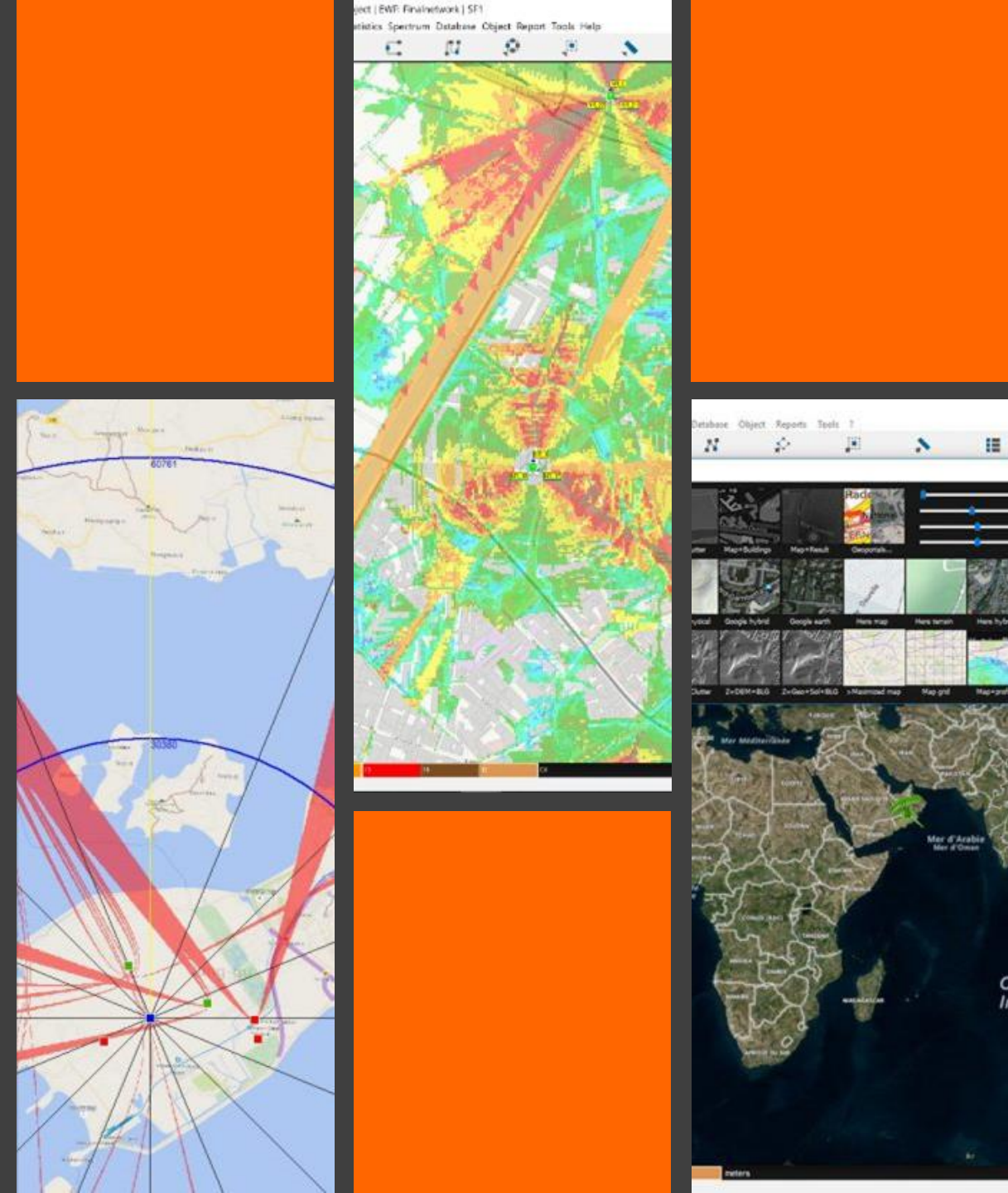
OUR SUCCESS REFLECTS OUR CUSTOMERS SUCCESS AND ENABLES THEM TO STAY COMPETITIVE IN A RAPIDLY CHANGING MARKET

ATDI are global leaders in the development and implementation of automated spectrum management solutions.

For over three decades we have backed nearly 100 spectrum regulation authorities. Our solutions continue to evolve to meet the growing needs of civil and defence regulators, in line with ITU guidelines.

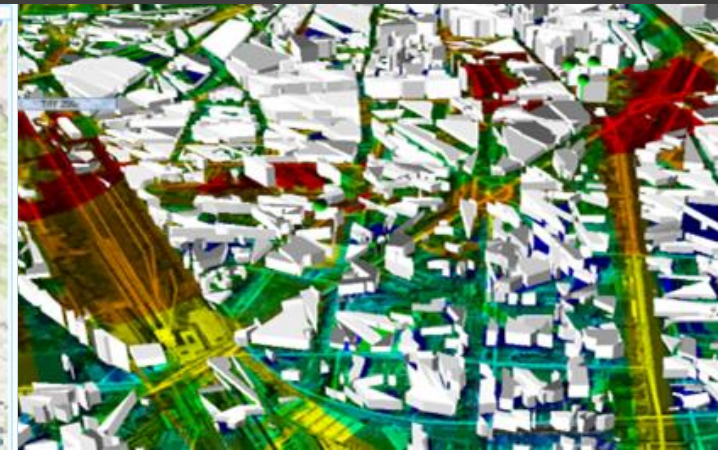
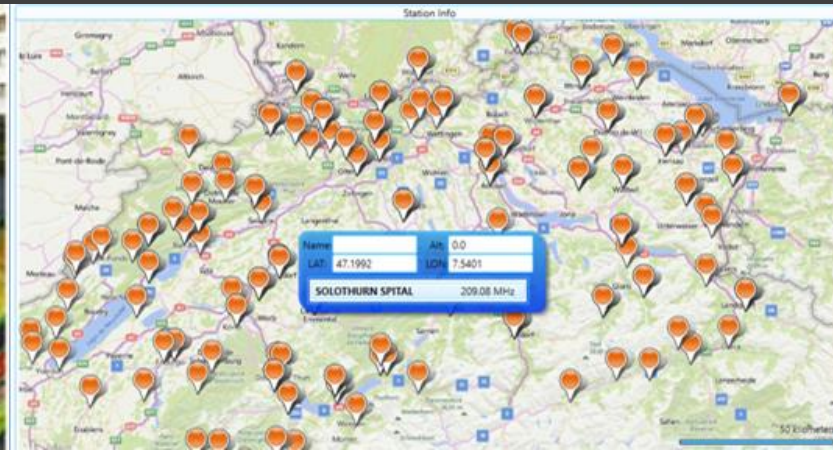
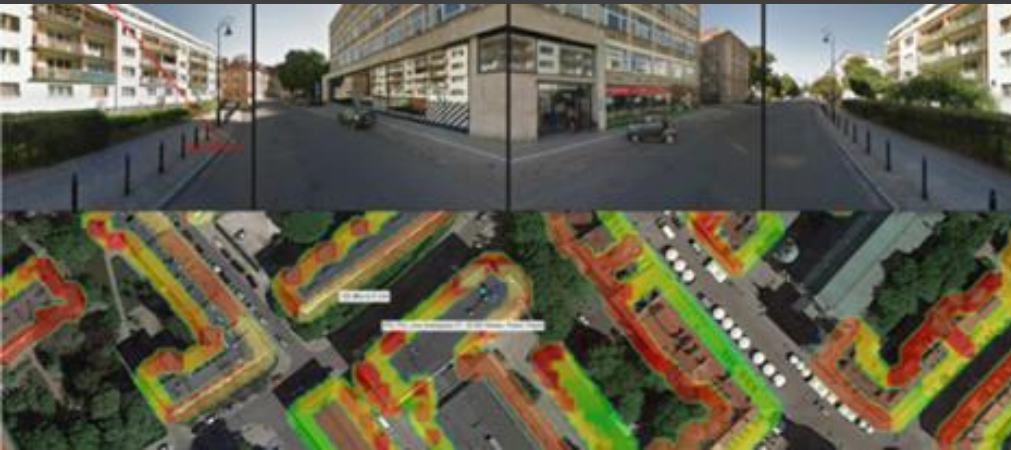
We help spectrum managers control and optimise spectrum, enable frequency sharing and automate resource-intensive processes.

1. **Proven – 70% of our custom is repeat business**
2. **Experience - 100 spectrum managers / regulators - Repeat custom - Proven ability to adapt solutions**
3. **Ethos – Experience – Innovation – Challenge ideas can support change**



Our Values & Contributions

- Dedicated R&D to enable we stay ahead of the game
- Solutions compatible with ITU regulations. Contributions to industry organisations including VP of ITU-R and ITU-D.
- Our team has an excellent understanding of our customers needs – how – discussions/industry experience and a desire to find the best fit (solution) for the end user
- Our team – built from diverse backgrounds enable us to draw from a wealth of knowledge and understanding of the industry and its requirements
- Work in partnership with our end users to ensure both pre-production, throughout project rollout and beyond.



Our Offices Global Footprint

- Allows us to leverage different time zones > Provide support around the clock > Fast response times
- Draw resources from across the group to support larger projects > leverage expertise > ensuring we offer the very best services to our end users
- Shared experiences – combining many years experience across the group. At every stage of the project (from project outset to going live) we aim to learn and improve our services. To do that we carry out regular internal project reviews and a group review at handover.



Automated Spectrum Management Solution

No two user requirements are the same

Our solutions allow the user to define their processes and procedures. Custom modifications offer flexibility and ensure the solution meets the end-user needs.

Our solutions allow spectrum managers to:

- **Control** the use of spectrum
- **Minimise** interference
- **Automate** frequency allocations and frequency sharing
- **Support** emerging technologies
- **Coordinate** the use of wireless spectrum with neighbours and other administrations
- **Manage** back-office functions for admin, licensing and billing
- **Make** data exchanges with end-users
- **Interface** with monitoring solutions
- **Support** spectrum re-farming and auctions

ASMS

Supports the entire spectrum regulation lifecycle

Establishing a framework to coordinate national, regional and cross-border interference

Spectrum
Regulatory Policy
& Framework

License &
assignment
management

Managing applications &
work processes inc:
Spectrum > Dealers >
Type Approval
> Import Permits >
numbering

Managing complaints
Enforcing & regulating
illegal emissions

Spectrum
Monitoring &
enforcement

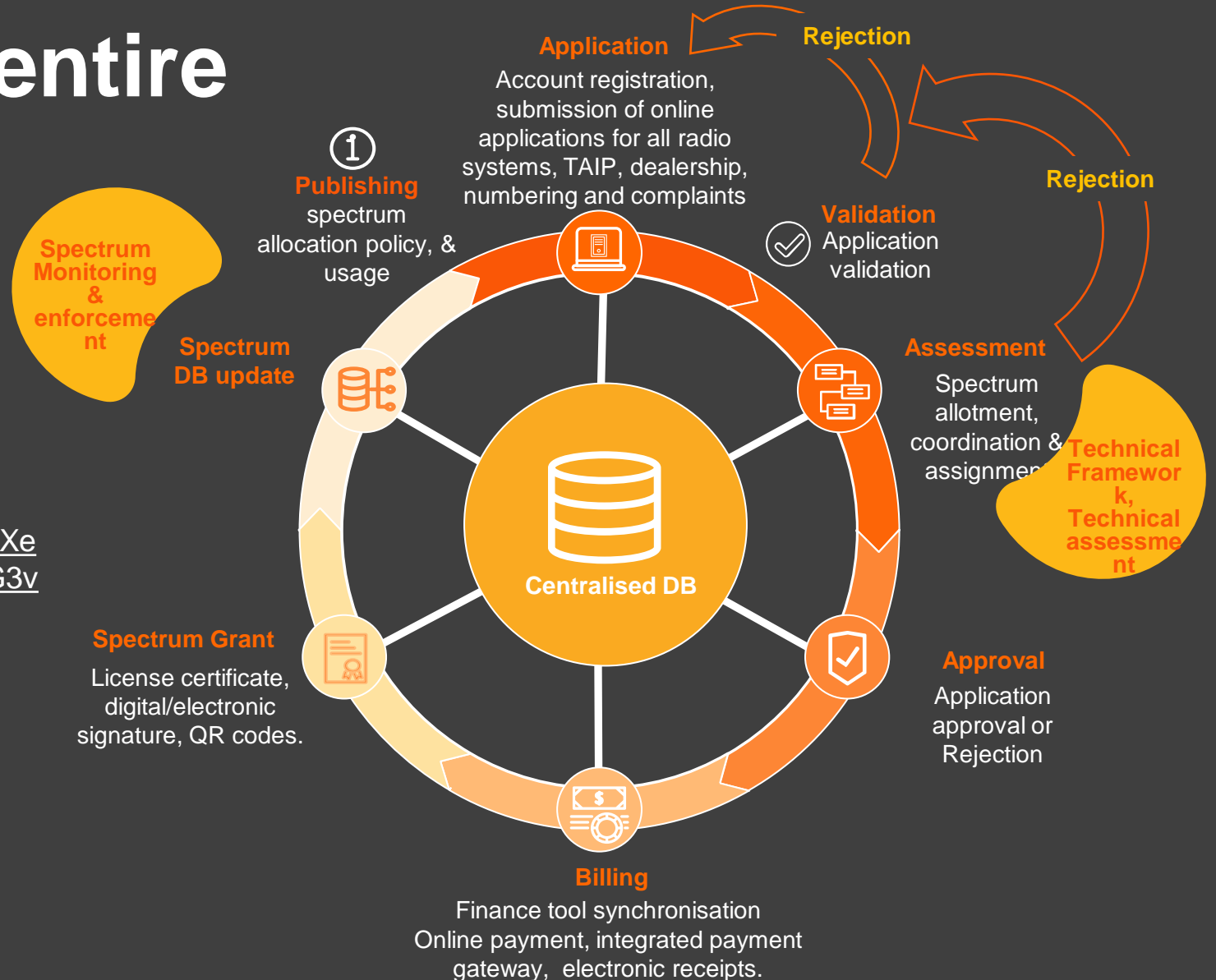
Database
management
& Control

Maintaining & controlling
centralised database inc:
radio system assets > users
> spectrum allocations
> spectrum monitoring

ASMS Supports the entire spectrum management lifecycle

Watch the solution demonstration:

<https://www.youtube.com/watch?v=qSdjJXevtns&list=PLap6vGTQpFveiKO3piYLSOG3vKI-luD8X&index=3>



Our Services



Training

Customised training service online or onsite.



Support

24/7 global technical support via phone, email and web-conference



System Customisation

Business analysis, system design, architecture, customisation, integration, and configuration.



Spectrum consulting

Provide professional consulting services in spectrum engineering and management to solve any spectrum issues.



Cartographic data

Medium to High resolution DTM and Clutter library.
Cloud base digital map image streaming and cache support.



System Deployment & Maintenance

Support on Go-Live, Testing, and bug fixing.
On-going maintenance support with software updates.

ICS Manager/eManager

A flexible solution that meets the current and future needs of regulators in all areas related to spectrum management

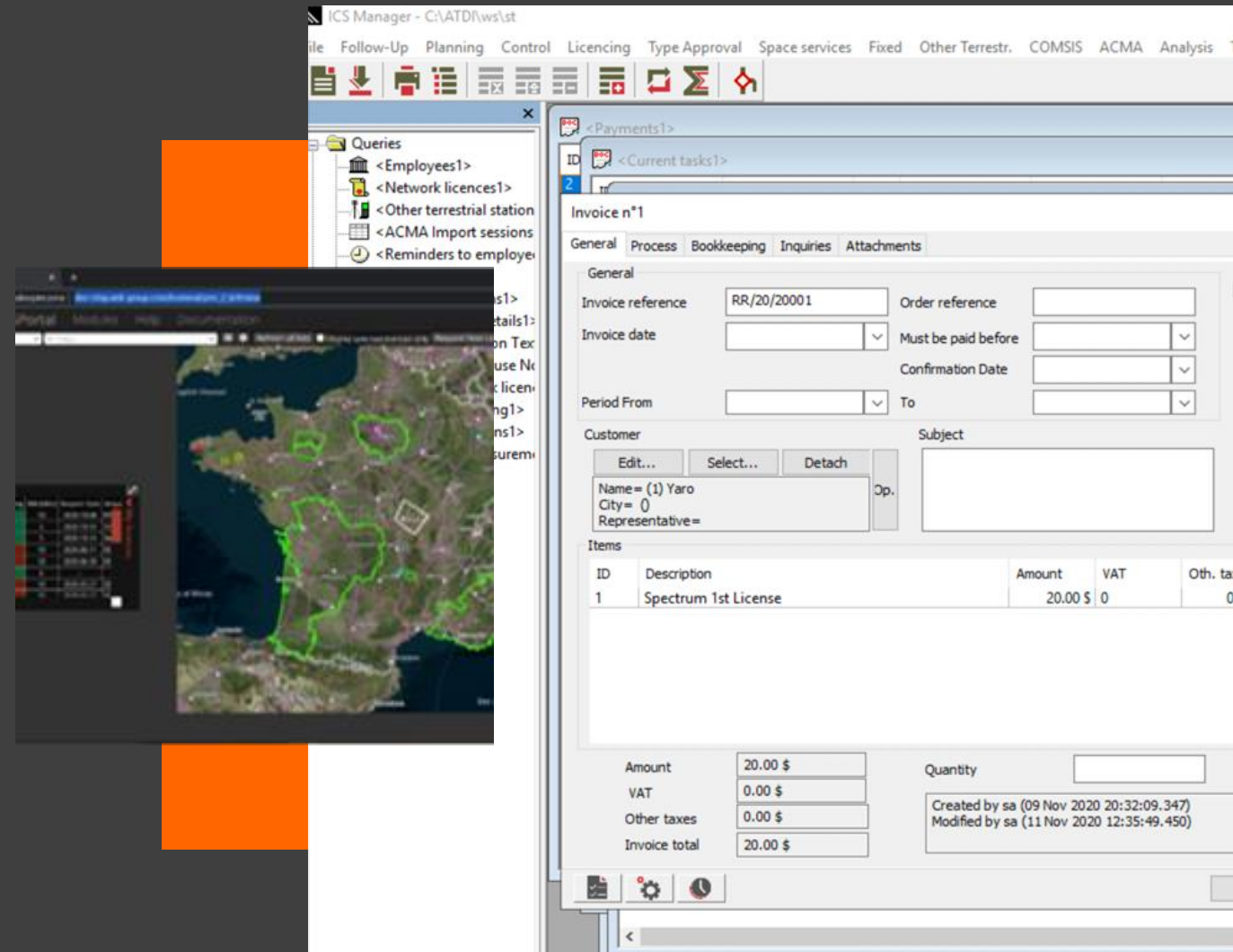
ICS manager/eManager

A flexible **SOLUTION** to meet current and future **NEEDS OF REGULATORS** in all areas related to spectrum management and monitoring.

Its' powerful data engine manages all data related to spectrum management, while continuously monitoring the coherence of the data.

ICS MANAGER ALLOWS THE IMPLEMENTATION OF AUTOMATED PROCESSES FOR THE PURPOSES OF:

- Allocations and Applications Management
- Channeling Plans & Channel Allotments Management Operational Management for all Services
- International Coordination Management for all Services Notification Management
- Licensing Management
- Billing Management
- Workflow Management
- Internal System Management
- Technical Analyses Management with HTZ communications
- Monitoring Interface



ICS manager/eManager

Customizable User Interface: ICS eManager is a flexible web-platform supporting any browsers and device type.

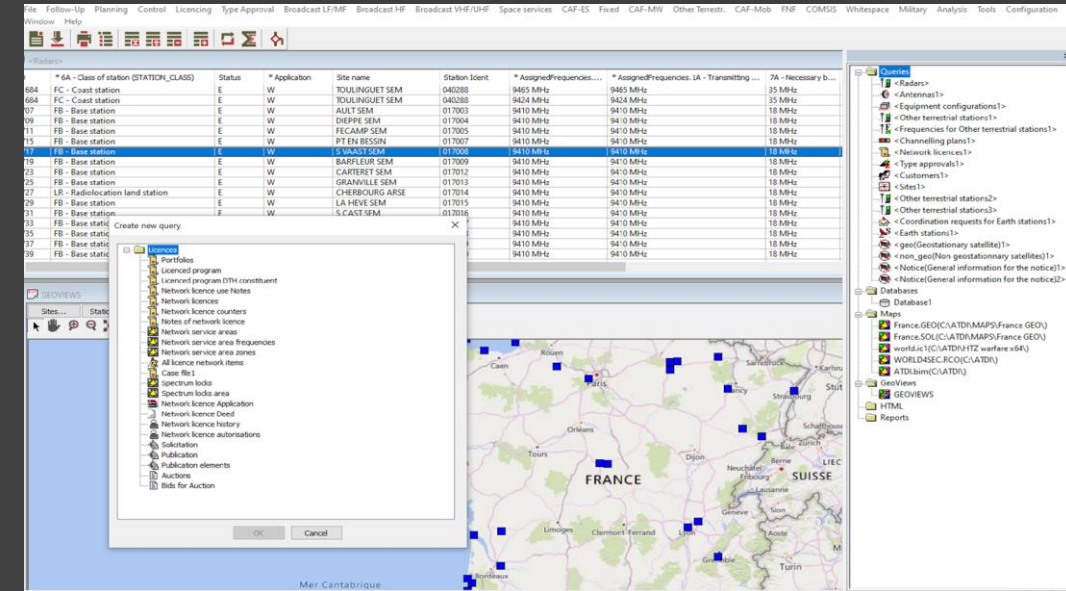
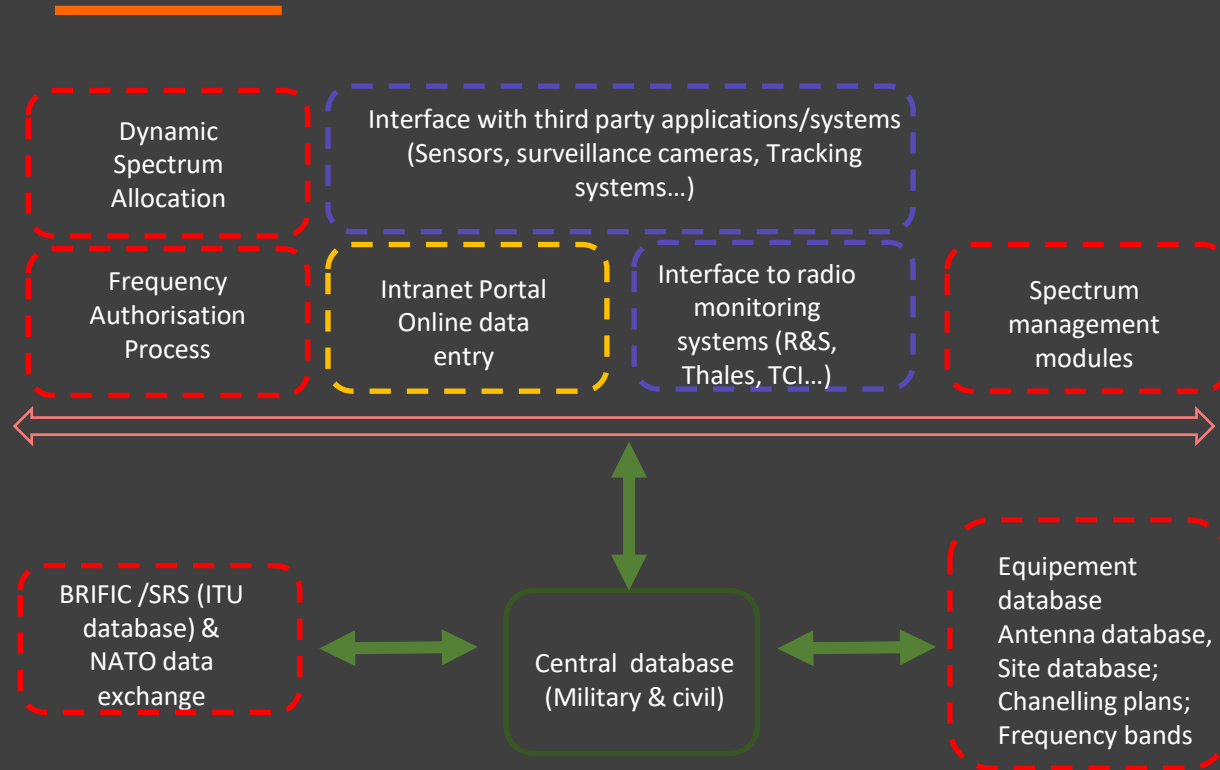
The User Interface customisation uses the corporate identification and supports the main use of the web-service.

- Account Management with SSO and Self-care Portal (External) and Business Applications Portal (Internal)
- Online applications
- Notification & reminders
- Billing
- License certificates
- Electronic Signature
- Electronic T&Cs
- Adaptative design

The screenshot displays the ICS manager/eManager web interface. On the left, a login form is visible with fields for Username and Password, and buttons for Login, Remember me, Forgot password, Change password, and Subscribe. Below the login form is the ATDI logo and a navigation bar with links: Mon Réseau Mobile, PMR 2,6 GHz, Portail ANFR, Localisation Arcep, and Parités Sites FH. On the right, a sidebar menu contains links for Billing, Import permits, Dealer licences, and Support. The main content area shows a table titled 'Operating Licence Applications' with columns for Title, Application Type, Sub-category, Status, Created, Applied, and Decision. The table lists various applications, including 'Revoke Frequency', 'Renewal License', 'Add Frequency', 'Remove Equipment', 'New License', 'Add Equipment', and 'Draft'.

Title	Application Type	Sub-category	Status	Created	Applied	Decision
OL-FR-S00156	Revoke Frequency		Applied	03.11.2020	03.11.2020	
OL-FR-S00154	Revoke Frequency		Applied	02.11.2020	02.11.2020	
OL-FR-S00153	Revoke Frequency		Applied	02.11.2020	02.11.2020	
OL-RN-S00126	Renewal License		Applied	30.10.2020	30.10.2020	
OL-FA-S00125	Add Frequency	Radio Determi...	Applied	30.10.2020	30.10.2020	
OL-ER-S00124	Remove Equipment		Applied	30.10.2020	30.10.2020	
OL-NE-S00114	New License	Ship Station	Draft	27.10.2020		
OL-NE-S00112	New License	Microwave Fix...	Draft	27.10.2020		
OL-EA-S00099	Add Equipment		Draft	27.10.2020		
OL-EA-S00098	Add Equipment		Draft	27.10.2020		
OL-EA-S00097	Add Equipment		Draft	27.10.2020		
OL-NE-S00096	New License	Base Station (...)	Draft	27.10.2020		
OL-NE-S00090	New License	Aircraft Station	Draft	26.10.2020		
OL-NE-S00089	New License	TVRO	Draft	26.10.2020		
OL-NE-S00088	New License	Ship Station	Draft	26.10.2020		
OL-NE-S00087	New License	Coastal Station	Draft	26.10.2020		
OL-RN-S00085	Renewal License		Applied	26.10.2020	30.10.2020	
OL-RN-S00081	Renewal License		Draft	26.10.2020		

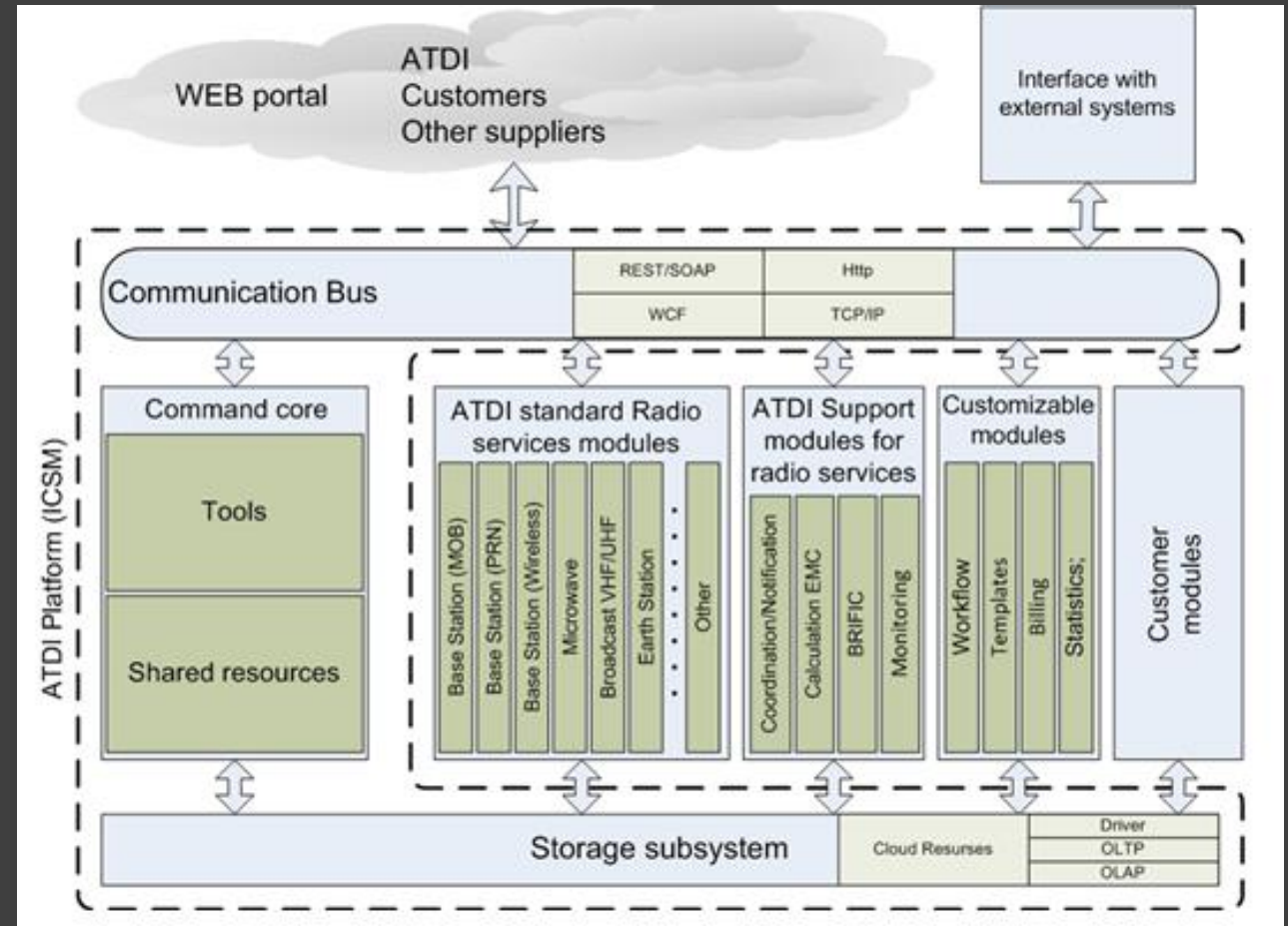
ICS manager/e-Manager



ICS manager

Multi-service orientated architecture

- Command core contains instrumental services to manage applications servers
- Service modules that are components of subject-matter logic which can be distributed
- The Communications BUS is an intermediate layer providing connectivity between all service modules and with the clients



Multi-service orientated architecture

Client-Service architecture

Server: SQL Server

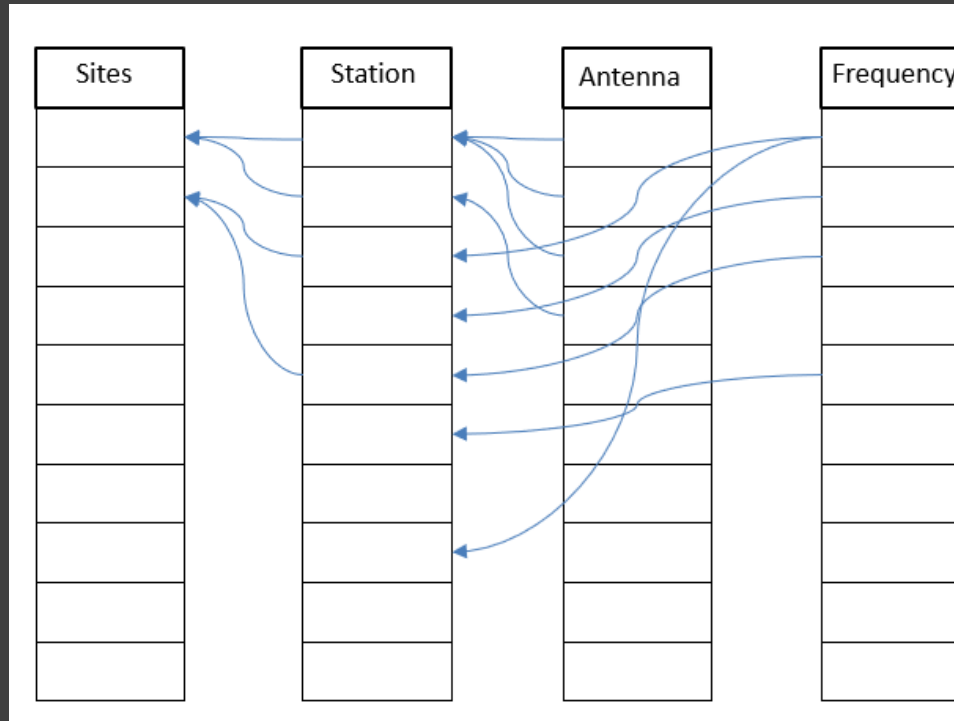
Client: desktop application on laptops/desktops

- Support for concurrent users accessing the database
- Ability to lock tables
- Ability to control access levels (Read/Write/Modify): configurable access levels depending on the tasks and rules defined by the Spectrum Authority (technical, administrative, financial)
- GIS capabilities
- API for 3rd party development and integration: CRM-Systems, financial systems, document, and cartographic management systems
- Reporting: customizable reporting templates to generate reports
- Track changes: system log on any changes in the data

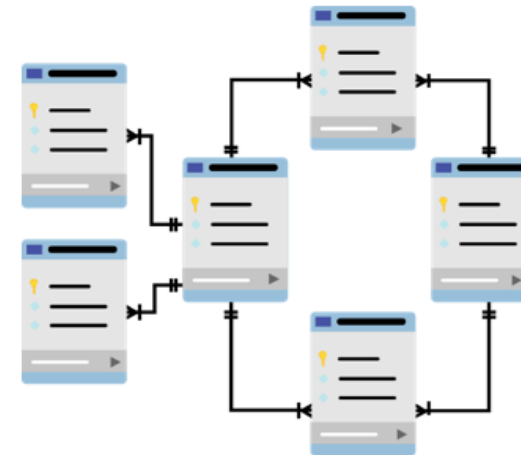


Multi-service orientated architecture

Relational tables in ICS manager



ICS manager database



Graphical User Interface

Each module has a user-friendly graphical interface. The user can access the functions and menu items either via toolbars or menus. The GUI can be customised and adapted to the specific needs and requirements of each user. Menu and sub-menus can be configure (display or hide) for each user in order to simplify the Graphical User Interface.

The screenshot displays the ATDI graphical user interface, which includes a main data table, an 'Active software components' dialog, and a 'Menu configuration' dialog.

Main Data Table:

ID	Code	*Name	Longitude	Latitude	Ref. EW	Ref. NS	Ref.
3	10000002	Optus 50m Lattice Tower 71 Eastward Road Utakarra	114° 38' 03.34" E	28° 46' 39.58" S	114.63426	-28.77756	4DEC
110	10000114	Optus Monopole, Taree Cundelltown 17301 Pacific Hig	152° 32' 00.74" E	31° 54' 06.88" S	152.53354	-31.90191	4DEC
192	1000002	Optus/Vodafone Site Water Tank Blooms Rd NORTH WAR	145° 13' 19.23" E	37° 43' 42.78" S	145.22207	-37.72855	4DEC
347	10000377	Optus COW - Splendour in the Grass LOT 46 Jones Ro	153° 31' 04.91" E	28° 28' 19.3" S	153.518031	-28.472028	4DEC
366	10000396	Optus site Light pole Intersection of Pittwater Ro	151° 17' 42.63" E	33° 42' 36.33" S	151.295176	-33.710091	4DEC
369	10000399	Optus Light Pole Intersection of Pittwater Road an	151° 17' 42.63" E	33° 42' 36.36" S	151.29573	-33.7101	4DEC
453	10000484	Optus COW city2surf Campbell Parade Bondi Beach	151° 16' 43.81" E	33° 53' 22.27" S	151.278836	-33.88952	4DEC
468	100005	Optus Site Midlands Highway SPRING HILL TIER	147° 15' 48.28" E	42° 24' 53.71" S	147.263412	-42.41492	4DEC
587	10000620	Ungarra Optus 60m tower 176 Mount Hill Rd Ungarra	136° 03' 40.69" E	34° 09' 39.33" S	136.061304	-34.160925	4DEC
597	10000631	Optus Monopole Scott Street Parramatta Park	145° 45' 56.33" E	16° 55' 47.73" S	145.76564	-16.929924	4DEC
666	100007	Optus Site KELCEY TIER	146° 19' 38.5" E	41° 12' 38.72" S	146.327361	-41.210755	4DEC
674	10000707	Optus Monopole Bonegilla 42 McIntoshs Road Bonegil	146° 59' 39.12" E	36° 08' 01.75" S	146.9942	-36.13382	4DEC
1054	100011	Optus Site Off White Hills Road SULLOCKS HILL	146° 04' 41.19" E	41° 08' 39.57" S	146.078107	-41.144326	4DEC
1350	100014	Optus Site off Mole Creek Road GARDNERS RIDGE	146° 32' 11.74" E	41° 32' 26.08" S	146.536594	-41.540577	4DEC
1431	10001480	Optus Lattice tower, Port Victoria Lot 1, Kuhn Ter	137° 29' 18.43" E	34° 29' 37.35" S	137.488453	-34.493708	4DEC
1451	100015	Optus Site KELLYS LOOKOUT	146° 46' 31.32" E	41° 18' 13.08" S	146.775368	-41.303633	4DEC
1650	10001699	Optus 30m Concrete Monopole 121 Hamilton-Port Fair	142° 13' 19.96" E	38° 22' 48.61" S	142.22221	-38.38017	4DEC
1651	10001700	Optus 45m Concrete Monopole 341 Cretton Avenue Mil	142° 09' 35.08" E	34° 09' 52.94" S	142.159744	-34.164706	4DEC
1848	100019	Optus Site Water Reserve Grinter St West RIVERSIDE	147° 06' 23.51" E	41° 25' 39.67" S	147.106531	-41.427886	4DEC
1854	10001906	Optus IBC 101 Munibung Road CARDIFF	151° 38' 15.17" E	32° 56' 24.81" S	151.637547	-32.940225	4DEC
1855	10001907	Optus IBC Unit 3 5-7 Meridian Place BELLA VISTA	150° 56' 52.29" E	33° 44' 02.08" S	150.947858	-33.733912	4DEC
1861	10001913	Optus IBC 47 Mary Street KINGSTON	153° 07' 19.03" E	27° 39' 26.27" S	153.121952	-27.657297	4DEC
1862	10001914	Optus IBC 289 Wellington Pde South EAST MELBOURNE	144° 58' 33.34" E	37° 48' 58.51" S	144.975929	-37.816253	4DEC
1978	10002033	Longerengong optus monopole 229 Longerengong Road Lo	142° 18' 12.82" E	36° 40' 09.84" S	142.30356	-36.6694	4DEC
2032	10002089	Goomeri optus monopole 21, Olive St Goomeri	152° 03' 41.31" E	26° 10' 44.95" S	152.061475	-26.179152	4DEC
2044	10002106	Wondai optus lattice tower Scott Street WONDAL 460	151° 52' 50.71" E	26° 19' 38.38" S	151.880753	-26.327327	4DEC
2045	10002107	Nuriootpa Township optus monopole 5-9 Tanunda Road	138° 59' 42.65" E	34° 28' 37.16" S	138.99518	-34.47699	4DEC
2079	10002141	optus tower Ballan 20 OLD BALLANEE ROAD BALLAN 334	144° 13' 44.26" E	37° 35' 26.48" S	144.22896	-37.59069	4DEC
2269	10002331	Lancelin Township optus site 52281 Collins Way Lan	115° 20' 05.86" E	31° 00' 55.22" S	115.33496	-31.01534	4DEC
2402	10002464	Orford optus 35 monopole 1 Mary St Orford	147° 51' 57.6" E	42° 33' 59.11" S	147.866	-42.56642	4DEC
2448	10002510	Mount Direction optus monopole 71 Bullocks Head Ro	147° 00' 34.02" E	41° 14' 02.76" S	147.00945	-41.2341	4DEC
2491	10002553	DEVONPORT WEST Optus monopole 23 Hilcrest Rd., De	146° 19' 52.7" E	41° 11' 01.46" S	146.331305	-41.183738	4DEC
2697	10002760	Jolimont COW Optus cnr Alexandra Ave and Linlithgo	144° 58' 27.84" E	37° 49' 20.95" S	144.974401	-37.822485	4DEC
2736	100028	Optus Site Roebourne Road Reservoir OTAGO	147° 17' 52.12" E	42° 48' 04.51" S	147.29781	-42.801254	4DEC
2788	10002851	Optus COW temp site Alfred Street North Sydney 200	151° 12' 44.25" E	33° 50' 54.16" S	151.212291	-33.848379	4DEC
2800	10002863	Optus COW Alexandra Garden South Yarra	144° 58' 30.52" E	37° 49' 21.71" S	144.975144	-37.822696	4DEC
2801	10002864	Optus COW 41 Alfred Street South Milsons Point	151° 12' 42.05" E	33° 50' 49.78" S	151.21168	-33.84716	4DEC
2802	10002865	Optus COW, Port Macquarie Golf Course 698 Ocean Dr	152° 55' 00.88" E	31° 28' 53.54" S	152.91691	-31.48154	4DEC
2808	10002871	Batchelor optus tower 923 Batchelor Rd, Batchelor.	131° 02' 41.83" E	13° 02' 59.09" S	131.044954	-13.049747	4DEC
2809	10002872	Lake Bennett optus tower 5915 Sturt Highway, Coom	131° 08' 37.2" E	12° 59' 10.18" S	131.143666	-12.98616	4DEC

Active software components dialog: This dialog allows users to select active software components. The 'Spectrum management' component is currently selected. Other components include Monitoring, Inspections, Complaints, Customers, AeroNaval Certificates, RadioAmateur Certificates, LandMobile Certificates, Licences, Billing, Sites, Type approval, Coordination, Notification, Technical analysis, Studios, Phone Numbers, and Whitespaces.

Menu configuration dialog: This dialog allows users to configure the menu structure. The 'File' menu is currently selected. The 'Selected popup/command' list includes: Show, Show all, Hide (all), LEGEND (Green -> Visible command, Red -> Hidden command, Blue -> Required command), Smart treeview expansion, Reset to full menu, C:\Users\Samin\AppData\Local\AppConfADMIN.men, Save, and Cancel.

Query list

Query view

ID	Code	* Name	R..	City	Province
10608	510769	Optus Mobile Pty Limited		NORTH RYDE	NSW
10623	512112	Optus Mobile Pty Limited		NORTH RYDE	NSW
11892	1103276	Optus Mobile Pty Limited		NORTH RYDE	NSW
12002	1134840	Optus Vision Investments		NORTH RYDE	NSW
16125	1149289	Optus Mobile Pty Limited		NORTH RYDE	NSW
22920	20006748	OPTUS VISION MEDIA PTY		NORTH SYDNEY	NSW
23157	20007562	Optus Mobile Pty Limited		NORT	
23161	20007569	Optus Mobile Pty Limited		NORT	
23163	20007586	Optus Mobile Pty Limited		NORT	
24767	20014145	Optus Satellite Network Pty Limited		Macq	
25414	20017363	Optus Mobile Pty Limited		MAC	
25415	20017373	Optus Mobile Pty Limited		MAC	
29209	20033708	OPTUS FIXED INFRASTRUCTURE PTY LIMITED		NORT	

Access/edit client records

The screenshot displays the ICS Manager application window. The title bar reads "ICS Manager - D:\ownCloud\ATDI PTY\1- Customer demo\Transport NSW\RRLDB - [Clients]". The menu bar includes File, Follow-Up, Planning, Control, Licencing, Fixed, Other Terrest., COMSIS, Analysis, Tools, Configuration, Window, and Help. The toolbar contains icons for file operations and data management.

A "Queries" window is open, showing a table of client records. The table has columns: ID, Code, * Name, R., City, Province, and Customer type. The data rows are:

ID	Code	* Name	R.	City	Province	Customer type
10608	510769	Optus Mobile Pty Limited		NORTH RYDE	NSW	
10623	512112	Optus Mobile Pty Limited		NORTH RYDE	NSW	
11892	1103276	Optus Mobile Pty Limited		NORTH RYDE	NSW	

Below the table, it says "Customer n°11892".

The main window has a tabbed interface with the following tabs: General, Representative Address, Contacts, Process, Invoice Address, Relations, Custom, Licences, Inquiries, Allotments, Appears in, and Attachments. The "Licences" tab is currently selected.

Under the "Licences" tab, there is a "Spectrum..." button and a "Networks" section. The "Networks" section contains a table with the following data:

ID	Status	Type	Type description	Radiocom syst...	Identifier	Start date	Stop date	LIC_Service area	Fa...
11280	Gran	Spectrum	2 GHz Band		10143562	12 Oct 2017	11 Oct 2032		
17240	Gran	Spectrum	1800 MHz Band		10231258	30 May 2017	17 Jun 2028		
72516	Gran	Spectrum	1800 MHz Band		10231258	30 May 2017	17 Jun 2028		
72522	Gran	Spectrum	1800 MHz Band		9263448	18 Jun 2013	17 Jun 2028		

At the bottom of the window, there is a "GeoViews" section with a "DTRS sites" button and a "Duplicates and dependencies..." button.



Graphical User Interface

License management (View)

ICS Manager - D:\ownCloud\ATDI PTY LTD - Customer demo\Transport NSW\RRLLDB - [Optus licenses]

File Follow-Up Planning Control Licencing Fixed Other Terrest. COMSIS Analysis Tools Configuration Window Help

ID	Status	Type	Type description	Radiocom syst...	Owner	Identifier	Start date
52076	Gran	Land Mobile	Ambulatory System		DEPT OF PREMIER & CABINET	1192770/2	17 Apr 2018
40901	Gran	Land Mobile	Land Mobile System -> 30MHz		SYDNEY TRAINS	1141360/1	27 Apr 2018
1978	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TELSTRA PAY TV PTY LTD	10008835/1	01 Sep 2003
2010	Gran	Broadcast Service Licence	Subscription Television Broadcasting		PRIMESTAR COMMUNICATIONS AUSTR	10008867/1	08 Feb 2001
1987	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008844/1	13 Oct 1995
1986	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008843/1	13 Oct 1995
1985	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008842/1	13 Oct 1995
1984	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008841/1	13 Oct 1995
1983	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008840/1	13 Oct 1995
1982	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008839/1	13 Oct 1995
1981	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008838/1	13 Oct 1995
1989	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008846/1	13 Oct 1995
1979	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008836/1	13 Oct 1995
1990	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008847/1	13 Oct 1995
1977	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TELSTRA PAY TV PTY LTD	10008834/1	01 Sep 2003
1976	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008833/1	22 Jan 2003
1975	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008832/1	22 Jan 2003
1974	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008831/1	22 Jan 2003
1973	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008830/1	22 Jan 2003
1972	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008829/1	22 Jan 2003
1971	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008828/1	22 Jan 2003
1970	Gran	Broadcast Service Licence	Subscription Television Broadcasting		TRANSACT BROADCASTING PTY LTD	10008827/1	22 Jan 2003
1980	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008837/1	13 Oct 1995
1999	Gran	Broadcast Service Licence	Subscription Television Broadcasting		SELECTRA PTY. LTD.	10008856/1	25 Nov 1997
2095	Gran	Broadcast Service Licence	Subscription Television Broadcasting		SELECTRA PTY. LTD.	10008952/1	25 Nov 1997
2008	Gran	Broadcast Service Licence	Subscription Television Broadcasting		PRIMESTAR COMMUNICATIONS AUSTR	10008865/1	08 Feb 2001
2007	Gran	Broadcast Service Licence	Subscription Television Broadcasting		PRIMESTAR COMMUNICATIONS AUSTR	10008864/1	08 Feb 2001
2006	Gran	Broadcast Service Licence	Subscription Television Broadcasting		PRIMESTAR COMMUNICATIONS AUSTR	10008863/1	08 Feb 2001
2005	Gran	Broadcast Service Licence	Subscription Television Broadcasting		PRIMESTAR COMMUNICATIONS AUSTR	10008862/1	08 Feb 2001
2004	Gran	Broadcast Service Licence	Subscription Television Broadcasting		PRIMESTAR COMMUNICATIONS AUSTR	10008861/1	08 Feb 2001
2003	Gran	Broadcast Service Licence	Subscription Television Broadcasting		SELECTRA PTY. LTD.	10008860/1	25 Nov 1997
2002	Gran	Broadcast Service Licence	Subscription Television Broadcasting		SELECTRA PTY. LTD.	10008859/1	25 Nov 1997
1988	Gran	Broadcast Service Licence	Subscription Television Broadcasting		Northgate Cable Television Pty Ltd	10008845/1	13 Oct 1995
2000	Gran	Broadcast Service Licence	Subscription Television Broadcasting		SELECTRA PTY. LTD.	10008857/1	25 Nov 1997

License management (Filter)

Column

Title of column: Owner ☒ Retrieved ☒ Displayed

Column width (pixels): 220

Field description: LICENCE.Owner.NAME
Customer Name

Ordering: ☐ Ascending ☐ Descending Rank

Formatting: Auto - Not formatted

Style

Column colorization

☐ License queries

- Simultaneous filters on multiple columns
- Filter by licensee
- Filter by type/status

Greater than...

Greater or equal to...

Less than...

Less or equal to...

Equal to...

Different from...

Like... ☒ *OPTUS*

Not Like... ☐

Null or empty ☐

Not empty ☐

Filter...
Clear filter
Sort ascending
Sort descending
Statistics...
Save Bitmaps...

Owner
DEPT OF P
SYDNEY TI
TELSTRA F
PRIMESTA
Northgate
Northgate
Northgate
Northgate Cable Television Pty Ltd
Northgate Cable Television Pty Ltd
Northgate Cable Television Pty Ltd
Northgate Cable Television Pty Ltd

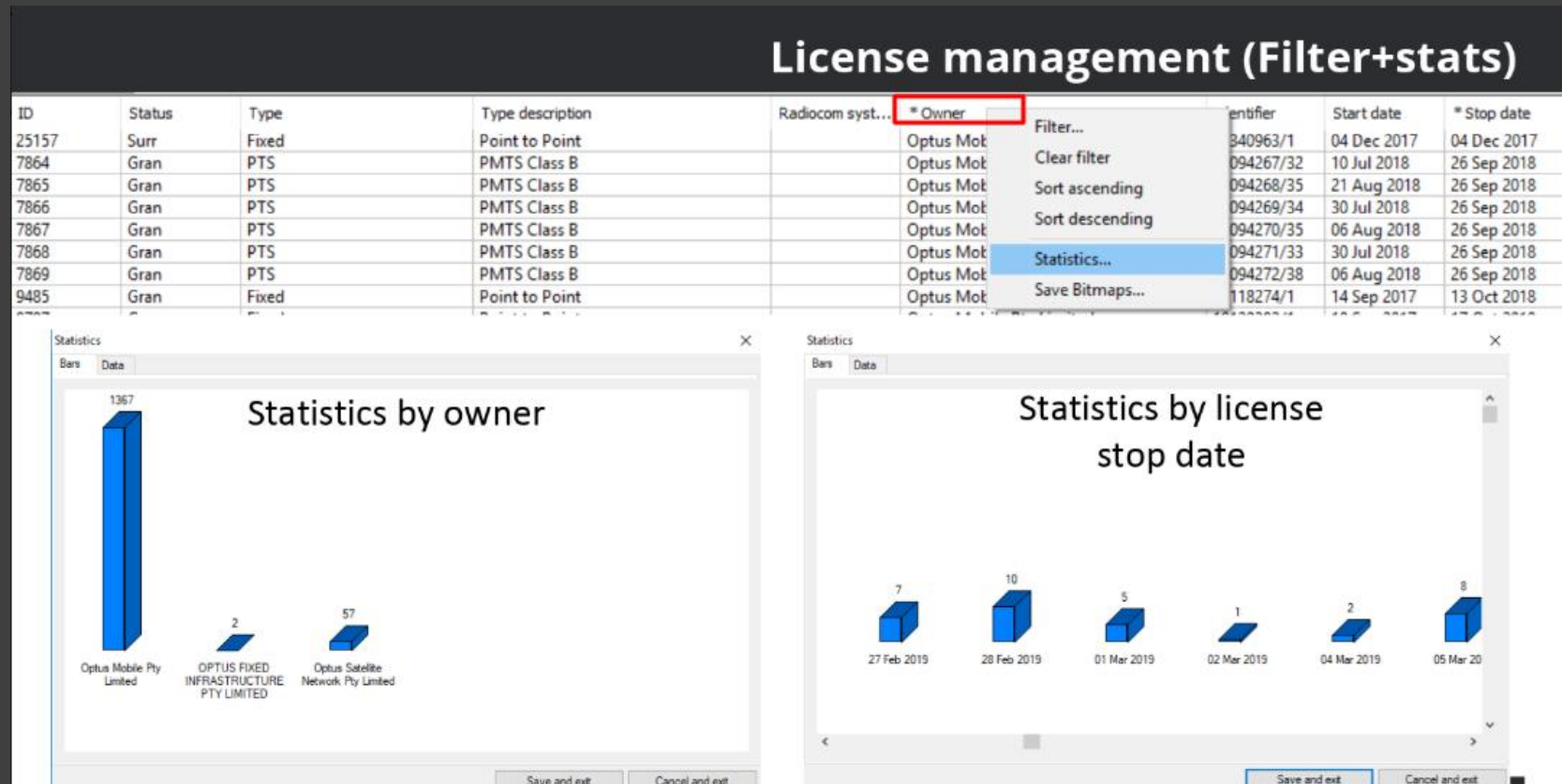
17 04 Dec 20
3 26 Sep 20
18 26 Sep 20
3 26 Sep 20
18 26 Sep 20
3 26 Sep 20
18 26 Sep 20
7 13 Oct 20
7 17 Oct 2018

100
100
100
100

OK Cancel

ADVANCED SOLUTIONS IN RADIOCOMMUNICATIONS

Graphical User Interface



Graphical User Interface

Sites (Filter+stats)

ID	Code	* Name	Province (PROVINCES)
3	10000002	Optus 50m Lattice	WA
110	10000114	Optus monopole, T	NSW
192	100002	Optus/Vodafone Sit	VIC
347	10000377	Optus COW - Splen	NSW
366	10000396	Optus site Light pol	NSW
369	10000399	Optus Light Pole Im	NSW
453	10000484	Optus COW city2su	NSW
468	100005	Optus Site Midland	TAS
587	10000620	Ungarra Optus 60m	SA
597	10000631	Optus Monopole Sc	QLD
666	100007	Optus Site KELCEY	TAS
674	10000707	optus monopole Bc	NSW
1054	100011	Optus Site Off Whit	TAS
1350	100014	Optus Site off Mole	TAS
1431	10001480	Optus Lattice tower	SA
1451	100015	Optus Site KELLYS L	TAS
1650	10001699	Optus 30m Concret	VIC
1651	10001700	Optus 45m Concret	VIC
1848	100019	Optus Site Water Re	TAS
1854	10001906	Optus IBC 101 Mun	NSW
1855	10001907	Optus IBC Unit 3 5-	NSW
1861	10001913	Optus IBC 47 Mary	QLD
1862	10001914	Optus IBC 289 Welli	VIC
1978	10002033	Longerenong optus	VIC
2032	10002089	Goomeri optus mor	QLD
2044	10002106	Wondai optus lattic	QLD
2045	10002107	Nuriootpa Townshp	SA
2079	10002141	optus tower Ballan	VIC
2269	10002331	Lancelin Townshp	WA
2402	10002464	Orford optus 35 m	TAS
2448	10002510	Mount Direction op	TAS
2491	10002553	DEVONPORT WEST	TAS

Graphical User Interface

- ☐ Support for custom fee calculation formula
- ☐ By license type
- ☐ By frequency range
- ☐ By expiry date
- ☐ By number of ports
- ☐ By designated areas
- ☐ Others

Auto fees calculation

Network Licence n°11754 ✕

General Contents Process Extension Custom Inquiries Appears in Monitoring Attachments

First start date: 09 Nov 2017

Last extension: Type of extension: Start date: 09 Nov 2017

Modif. number:

Expiration date: 08 Dec 2018

Termination date:

First signing date:

Signing date:

Statistics

	Tx only	Rx only	Transceivers
Number of equipments	4	4	
Number of frequencies	1		
Number of subscribers			
Fee	520.00 \$	<input type="checkbox"/> Exempted	

Applicant (if other than licensee)

Edit... Select... Detach

Created by ADMIN (13 Sep 2018 14:51:16.495)

Modified by ADMIN (13 Sep 2018 14:51:16.495)

Save and exit
Cancel and exit
Save changes

Graphical User Interface

Reporting (custom templates)

ICS Manager - D:\ownCloud\ATDI PTY\1- Customer demo\Transport NSW\RLDB - [Optus licenses]

File Follow-Up Planning Control Licencing Fixed Other Terrest. COMSIS Analysis Tools Configuration Window Help

Queries

- Clients
- Sites
- Active licenses by Sydney train
- <Network licences2>
- Transport NSW Spectrum
- Antennas
- Employees
- DTRS
- DTRS Licenses
- 1800 Devices
- <Microwave links1>
- DTRS sites
- <All sites1>
- Optus

ID	Status	Type	Type description	Radiocom syst...	* Owner
25376	Gran	Fixed	Point to Point		Optus Mobile Pty Limited
11748	Gran	Fixed	Point to Point		Optus Mobile Pty Limited
11746	Gran	Fixed	Point to Point		
11750	Gran	Fixed	Point to Point		
11751	Gran	Fixed	Point to Point		
11752	Gran	Fixed	Point to Point		
11753	Gran	Fixed	Point to Point		
11754	Gran	Fixed	Point to Point		
11755	Gran	Fixed	Point to Point		
11749	Gran	Fixed	Point to Point		
11787	Gran	Fixed	Point to Point		
11789	Gran	Fixed	Point to Point		
11790	Gran	Fixed	Point to Point		
11786	Gran	Fixed	Point to Point		
25410	Gran	Fixed	Point to Point		
25422	Gran	Fixed	Point to Point		
25417	Gran	Fixed	Point to Point		

Merge records...
Delete Selection...
New Record...
Query... F2
Search
Batch update
Print...
Create reminder...
Report...
Input by report...

Reporting (custom templates)

report - Compatibility Mode - Saved

File Home Insert Design Layout References Mailings Review View Help

Clipboard Font Paragraph Styles Editing Voice

License reporting

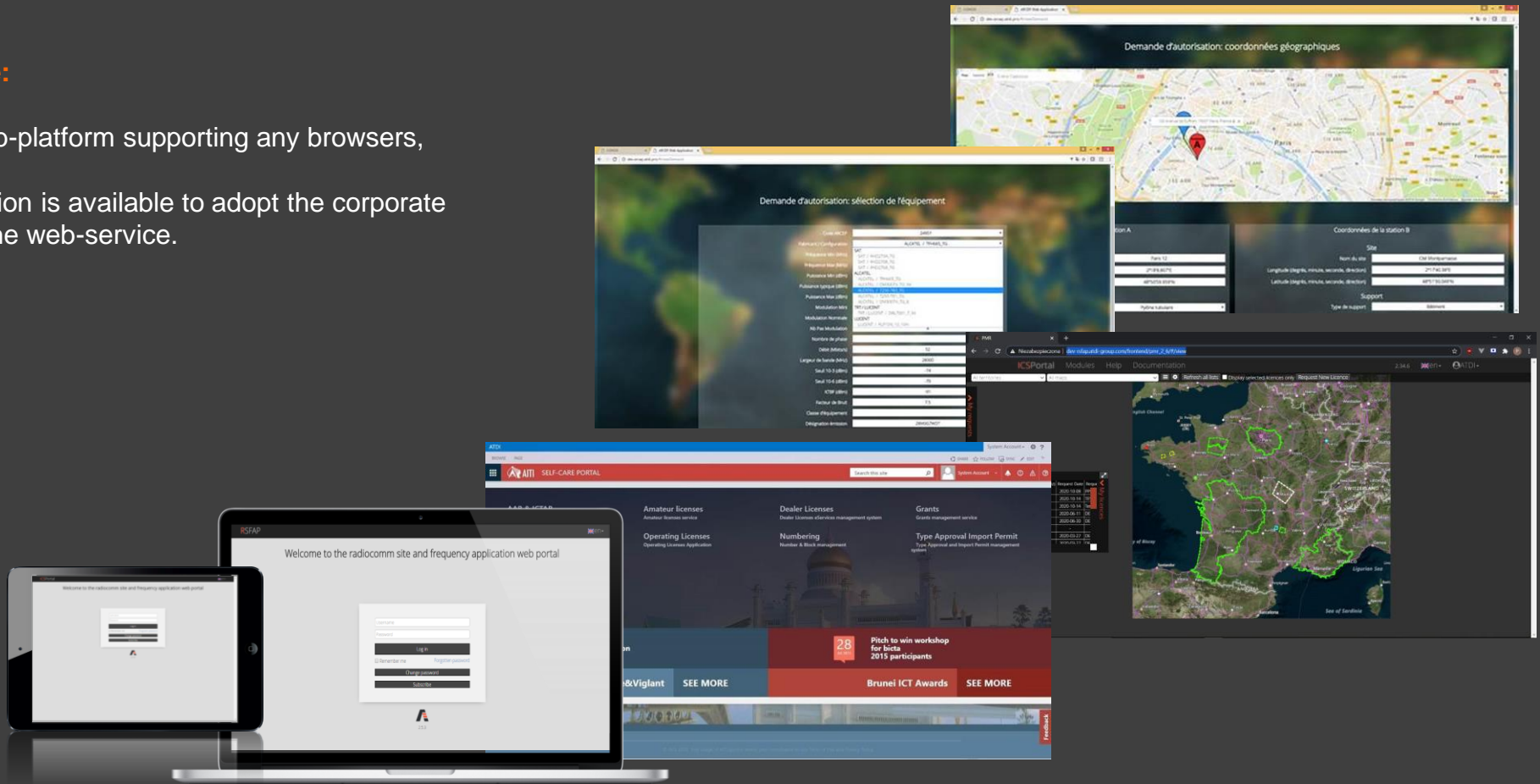
Client number	20017363
Licensee	Optus Mobile Pty Limited
License type	Fixed

License number:	10342795/1
Start date:	08 Dec 2017
Stop date:	07 Dec 2018
Fees:	
Client number	20017373
Licensee	Optus Mobile Pty Limited
License type	Fixed

Web-service Interface

Customisable User Interface:

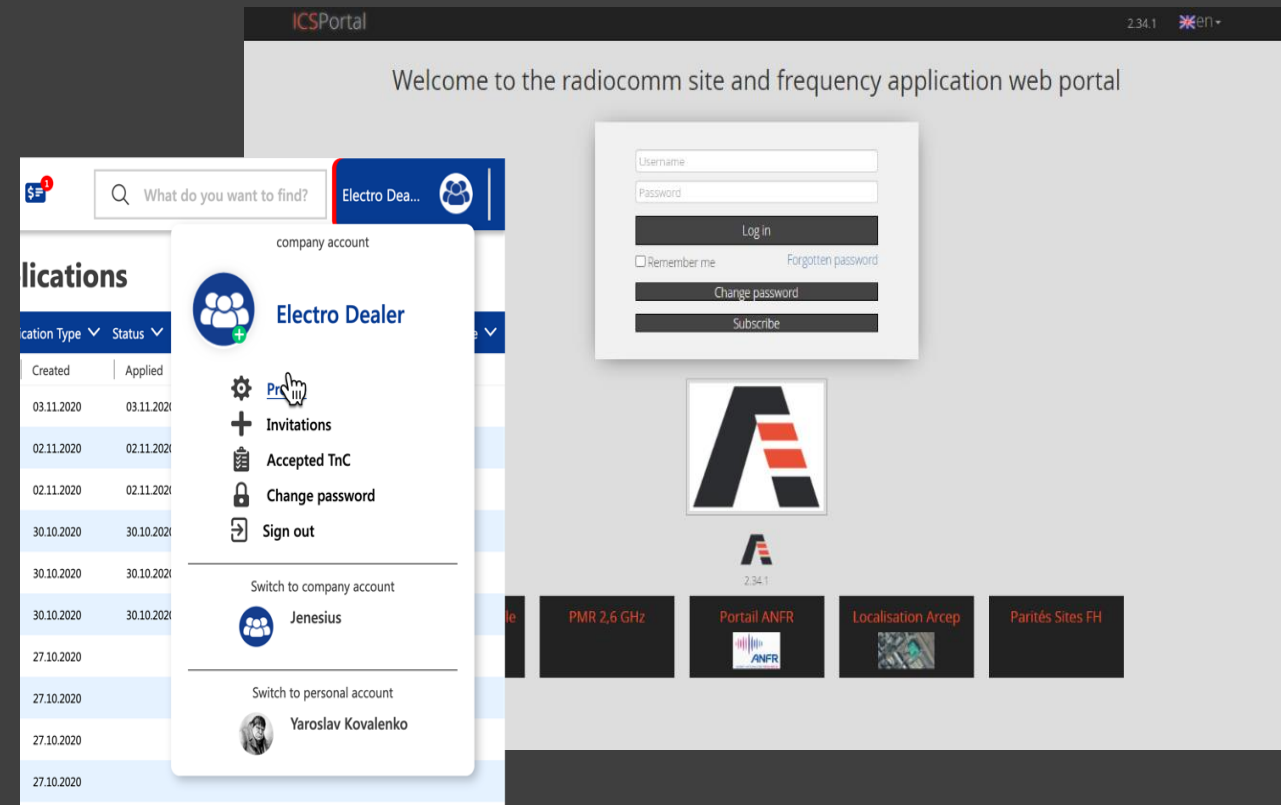
ICS eManager is a flexible web-platform supporting any browsers, and device type
 The User Interface customisation is available to adopt the corporate identification and purpose of the web-service.



Web-service Interface

Account Management :

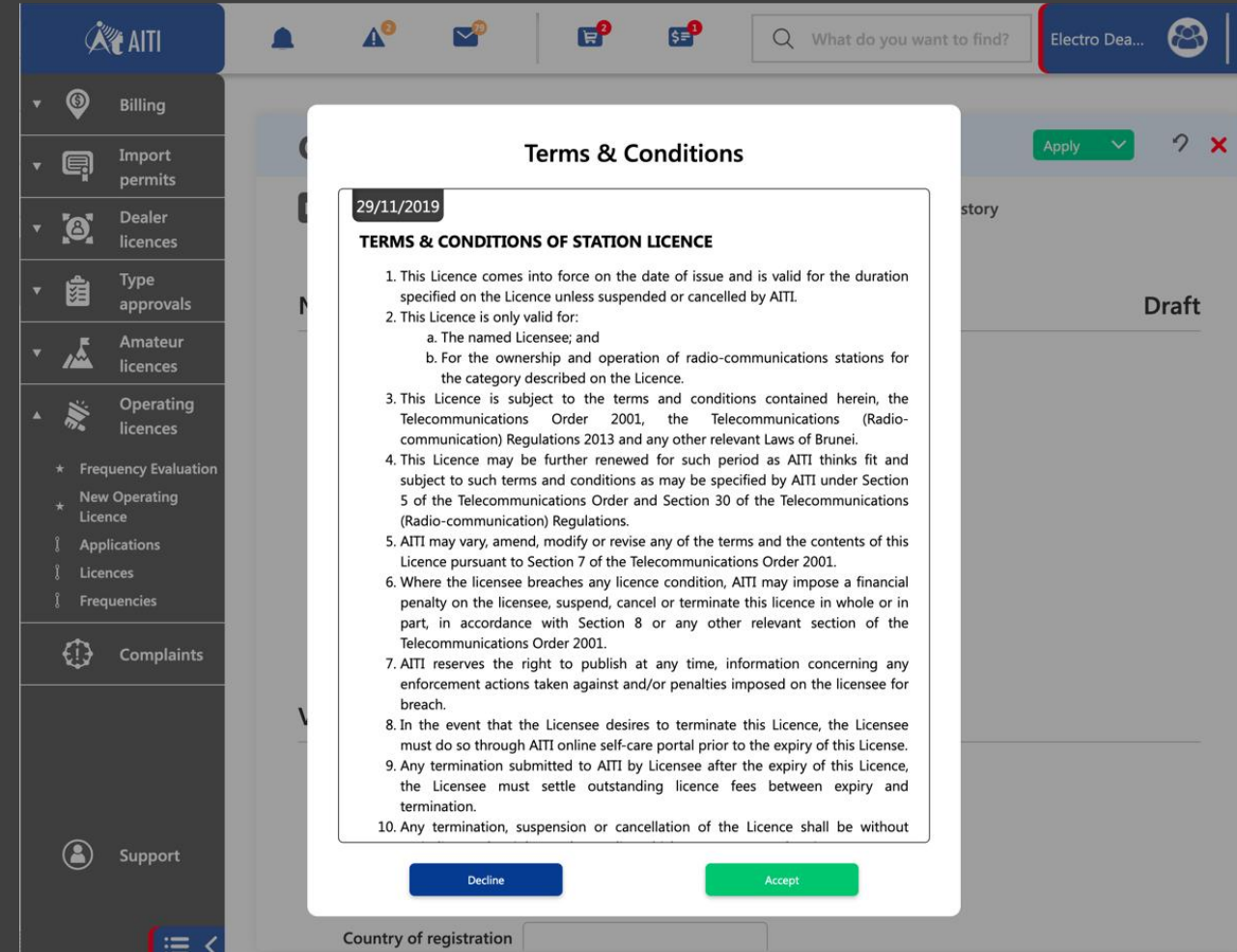
- This is a gateway for external licensees to manage their own self-care by registering applications and following up the assessment status
- Regulators can assign a corporate account per company licensee with account administrator. The account administrator can control the access of internal users for application submission
- Login screen with functions to Sign in, Sign up, Restore password
- Menu entry on main screen with items to edit user/organisation profile, create new organization, and change password.



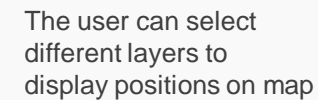
Web-service Interface

Legal documents and consent management

- The system will have an interface in ICS e-Manager to control versions of Master Agreement, current one and history to be stored in regulators' database and available for the regulatory system administrator to update.
- By default, the system shall require Customers to accept the Master Agreement before continuing to work with the web-service. When the Customer doesn't accept the Master Agreement, the system displays it after the Customer login and requires its acceptance or requires it to leave the web page. Date and time of the Acceptance is stored in the database.



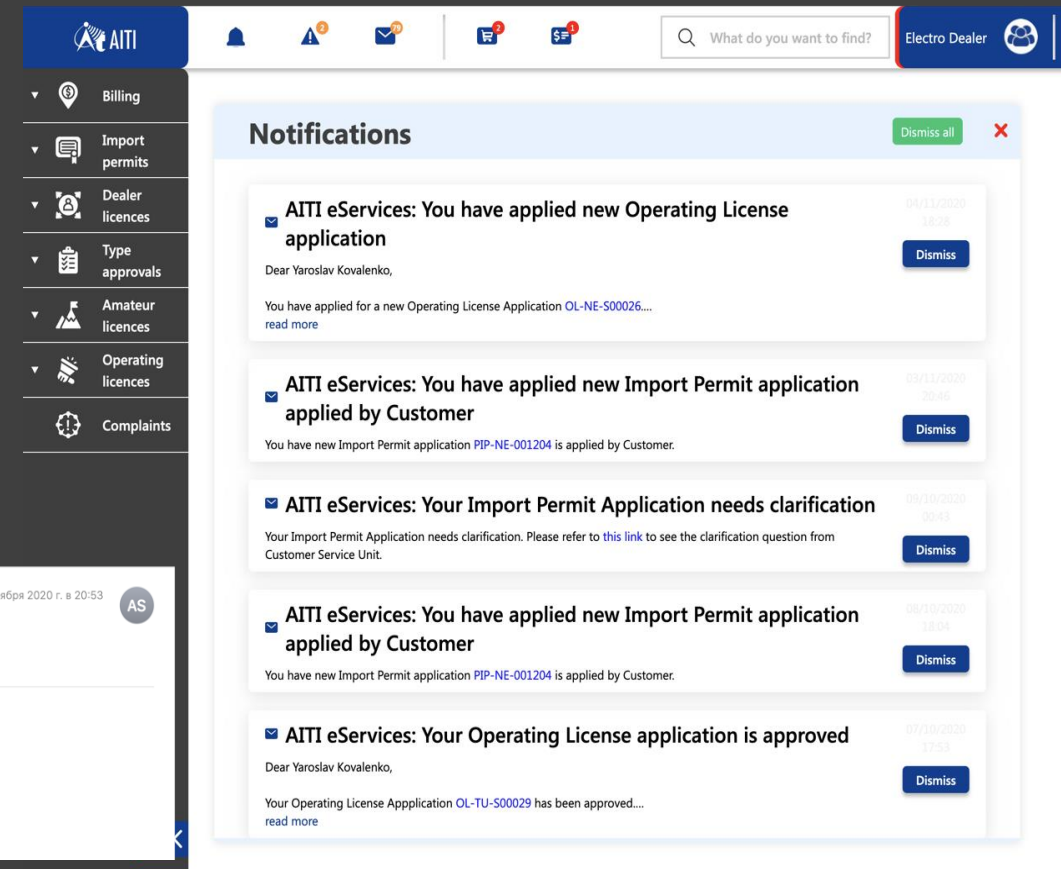
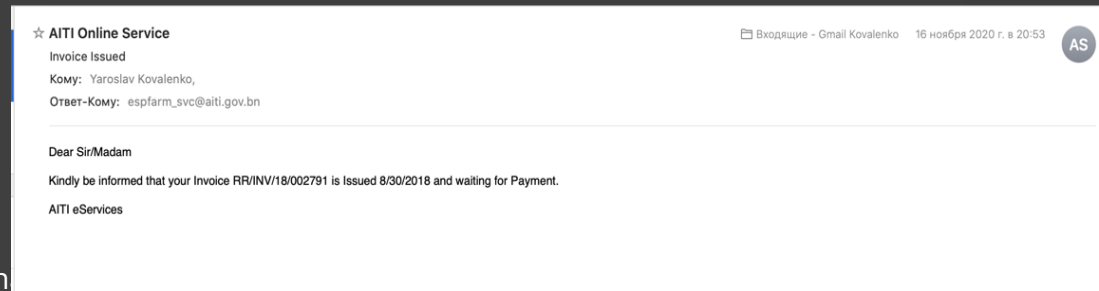
- With functions of manual insertion of technical parameters, or batch importation from .csv template
- With automatic data validation checks including antenna pattern file and other materials of device specifications and photos uploading and validation.
- With Geographical interface to validate/modify the position and height of antenna.



Web-service Interface

Notifications, Reminders and Alerts

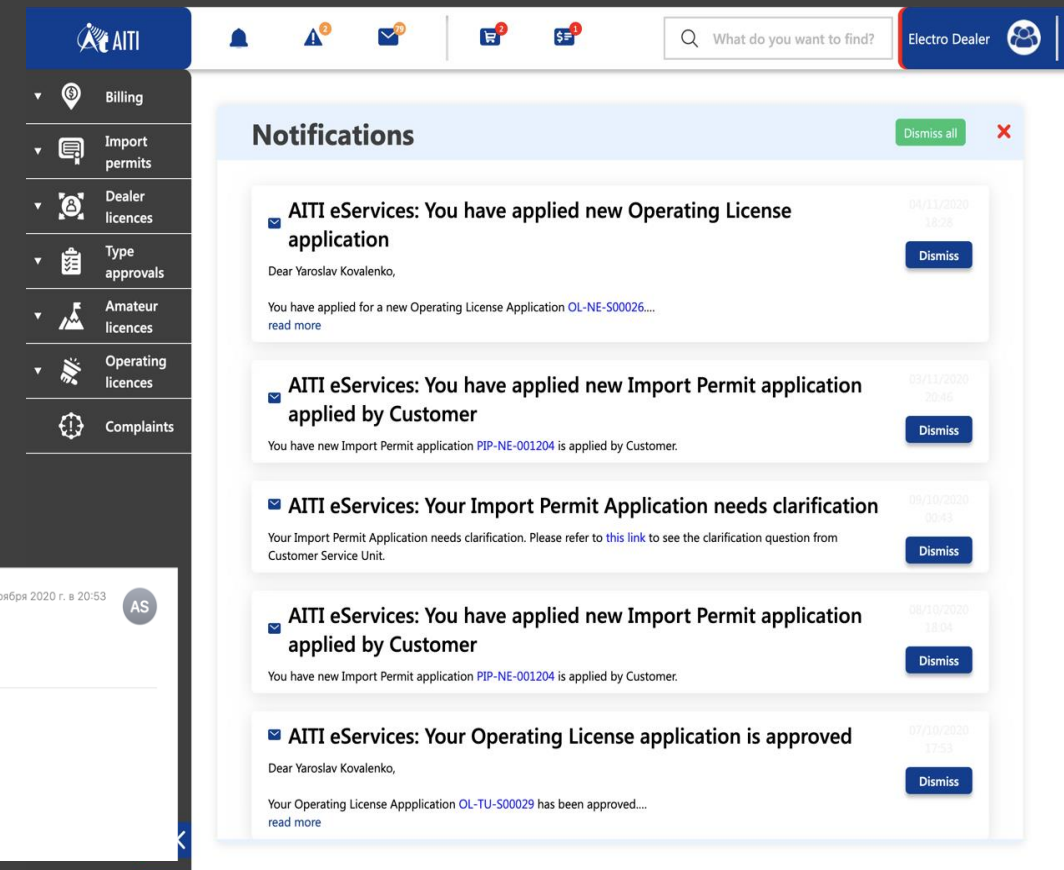
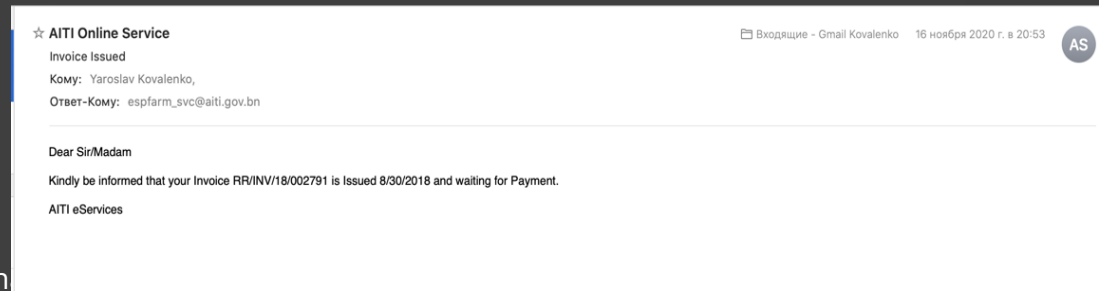
- Email
- Displaying on their web portal page. UI notifications may be marked as 'Dismissed' to make them disappear from users view.
- System administrator can generate and send an arbitrary notification to the customers.



Web-service Interface

Notifications, Reminders and Alerts

- Email
- Displaying on their web portal page. UI notifications may be marked as 'Dismissed' to make them disappear from users view.
- System administrator can generate and send an arbitrary notification to the customers.



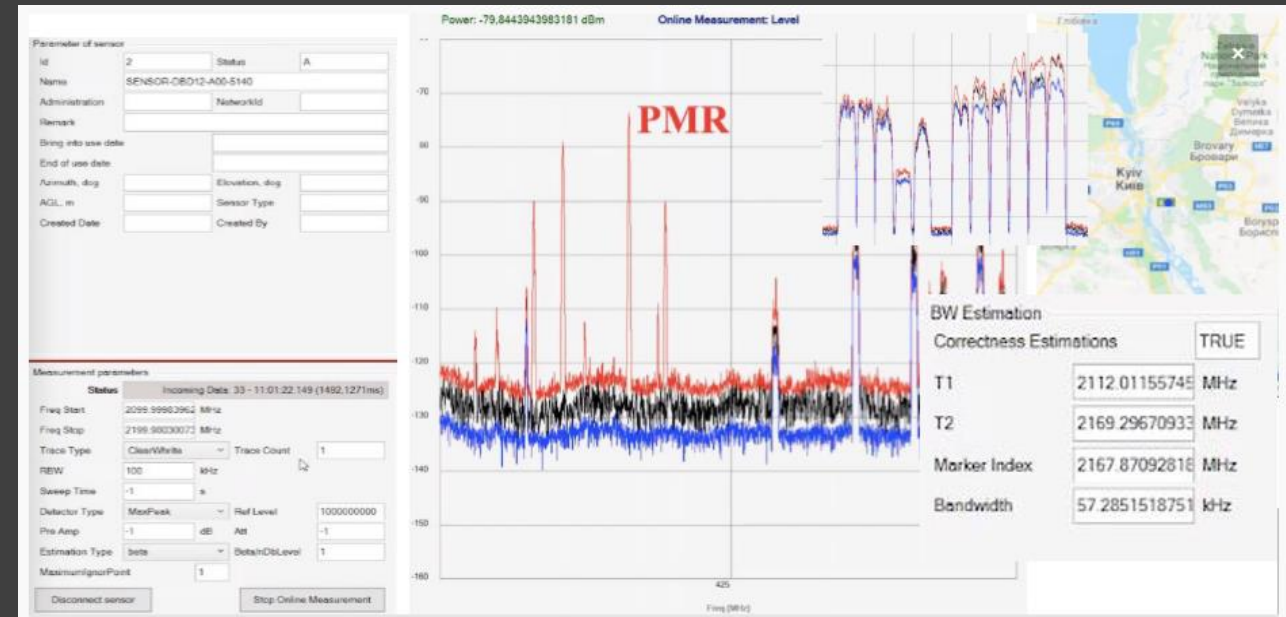
Complementary Solution 1

Integrated spectrum monitoring and big data control

ICS Monitoring SDRN which assesses spectrum use, monitors emissions and regulations the control of license emissions

ICS Monitoring - SDRN Control

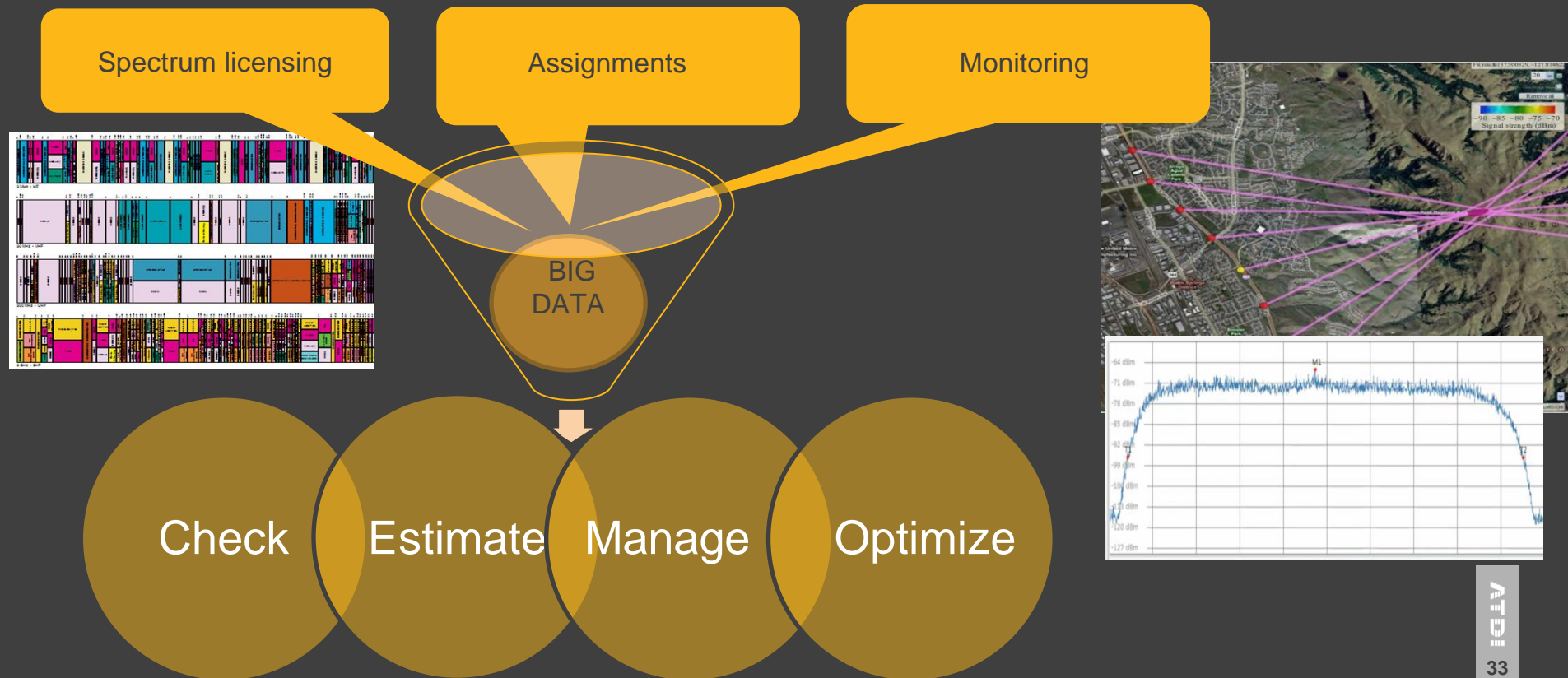
- Full and real-time integration with licensed equipment database
- Automated storage of electromagnetic situation measurements and analysis data
- Establishes spectrum reference situation based on measurement results and propagation modelling
- Real-time spectrum analysis without interruption from measurements already launched
- Background mode measurements require no human intervention
- Integrated GIS (map layers and terrain data)
- Spectrum Occupancy measurements
- Detection of unauthorised emissions by comparing spectrum emissions with spectrum masks from authorised transmitters
- Licensed transmitter data collection and storage
- Compares spectrum emissions with reference spectrum masks
- Bandwidth measurements
- Frequency band scanning
- Localisation of unauthorised emissions
- Hybrid localisation (TDOA / AOA / POA / RSSI)
- HOMING (Machine learning algorithm – HTZ required)



PROCESSING

ICS Monitoring - SDRN Control

GATHERING BIG AMOUNT OF DATA FROM VARIOUS SOURCES



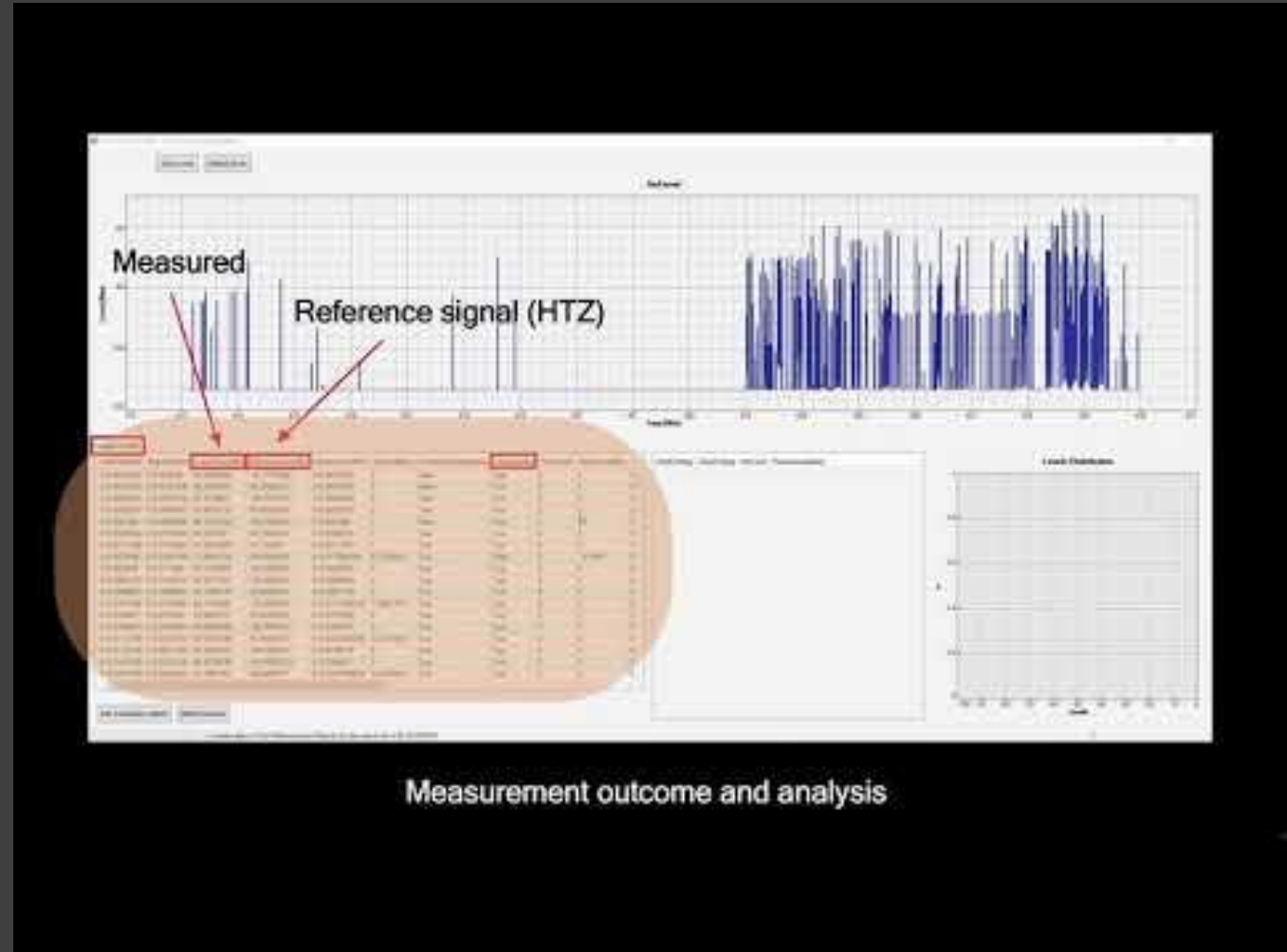
ICS Monitoring - SDRN Control

- ONE SINGLE SYSTEM GATHERING:
 - SPECTRUM MANAGEMENT AND INVENTORY DATA - **ICS MANAGER**
 - MEASUREMENTS - **ICS MONITORING/SDRN CONTROL**
 - EMISSIONS ANALYSIS BASED ON INVENTORY AND MEASUREMENTS - **HTZ COMMUNICATIONS & HTZ WARFARE**
- MULTITASK MEASUREMENTS
- INDEPENDENCY FROM MEASUREMENT EQUIPMENT
- MULTITHREADING IN MEASUREMENT DATA PROCESSING
- REPEATED USAGE OF MEASUREMENT DATA TO OBTAIN THE NECESSARY INFORMATION
- FLEXIBILITY AND SCALABILITY
- AUTOMATIC POST-PROCESSING OF MEASUREMENT RESULTS

Solution demonstration

Watch it on YouTube:

<https://youtu.be/1hmy9TKS4oY>



Complementary Solution 2

Spectrum Allocations Chart Editor

Reviewing ICS RF Allocations to build and publish detailed documentation about a country's FAT in an easy-to-use spectrum allocation chart management solution

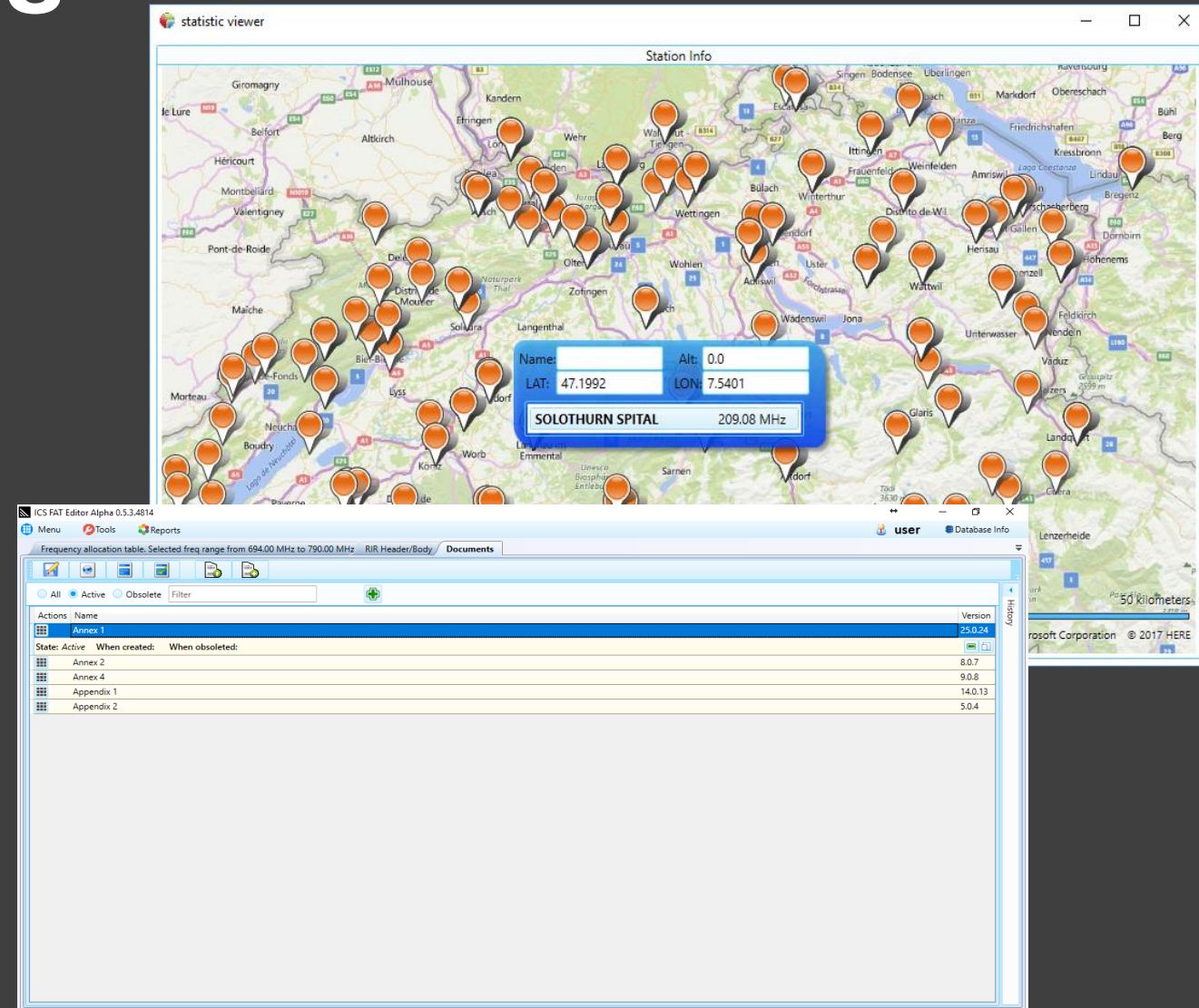
ICS RF Allocations

- Frequency allocation table display in a customisable matrix containing radio regulations and national allocation tables for all countries
- Show and filter data for all countries
- Add new records per frequency band such as ITU service, footnotes, hyperlinks, text, documents, EFIS applications
- Assemble reports based on Frequency Allocation Table (FAT)
- Interface Regulations (RIR) and other documents
- Export allocations and applications (XML EFIS format)
- Display and edit the Radio Interface Regulations with customisable filters
- Edit Radio Interface Regulations (RIR) headers and body separately
- Review Radio Interface Regulations (RIR) history table
- Report Radio Interface Regulations (RIR) data as PDF, XLS or HTML
- Detect documents and RIR not referenced by any frequency band
- Identify errors in hyperlinks within a frequency band

The screenshot displays the 'ICS RF allocations editor 0.6.0.7009' application. The main window shows a 'Frequency allocation table' with three visible sections: 'Very low frequency' (3'000 Hz to 30'000 Hz), 'Low frequency' (30'000 Hz to 300 kHz), and 'Medium frequency' (300 kHz to 3'000 kHz). Each section contains a grid of colored blocks representing different frequency allocations. A 'Band usage' tab is active, showing a detailed view of the 'Low frequency' band. A 'Dictionary: ITU Service decorator' dialog is open, allowing users to configure the 'Mobile' service. The dialog includes fields for Name, Info, Color, and Order, and a list of ITU services with checkboxes for selection. A 'Database Info' panel on the right shows various filters and properties for the selected frequency band.

ICS RF Allocations

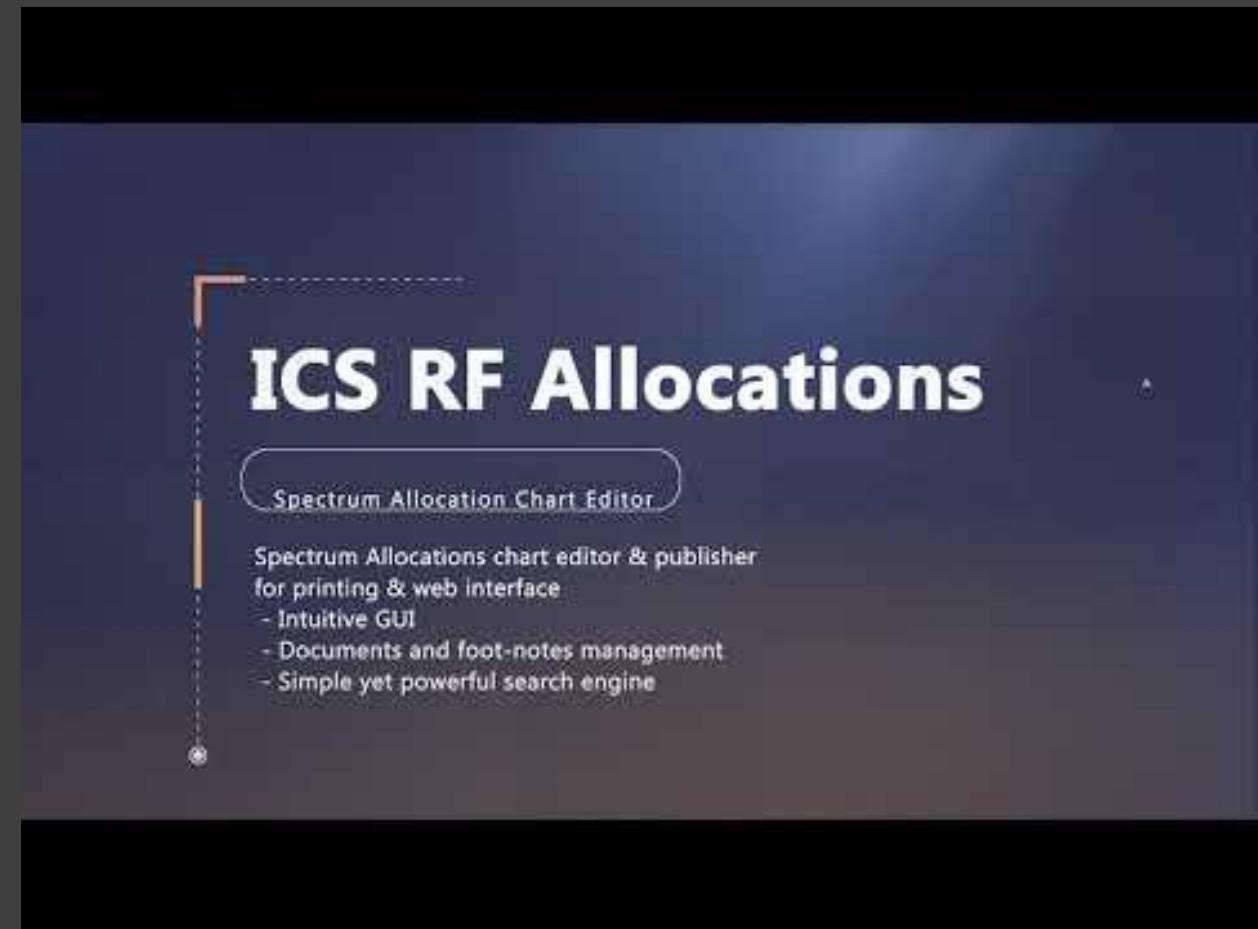
- Edit services and footnotes
- Modify existing records and track changes through a life cycle
- Alters text styles according to record state
- Create reports with or without highlighted changes
- Create and publish clear representations of specific applications within the same frequency band using floating windows
- Display simultaneously several frequency bands
- Report in DOCX, XLS or HTML formats
- Create a library of documents such as annexes, appendices, RIR



Solution demonstration

Watch it on YouTube:

https://www.youtube.com/watch?v=Xa31W_CSXVc



Annex

Use cases and references

References


Active customers in Civil Regulatory sector

Authority	Country	Spectrum Planning	Spectrum MGT
EUROPE			
OFCOM	United Kingdom	YES	YES
ANCOM	Romania	YES	YES
MITYC	Spain	YES	YES
Ministry of Transportation and Telecommunication	Greece	YES	YES
Ukrainian Radio Frequency Center	Ukraine	YES	YES
State Communications Inspection	Moldova	YES	YES
RATEL	Serbia	YES	YES
State Communications Inspection	Belarus	YES	YES
Ministry of Telecoms	Kazakhstan	YES	YES
RAK	Bosnia & Herzegovina	YES	YES
ANFR, National Frequencies Agency	France	YES	YES
CSA (Broadcast regulator of France)	France	YES	NO
ARCEP	France	YES	YES
Ministère intérieur	France	YES	YES
CNGF	France	YES	YES
BAKOM, Switzerland Spectrum Authority	Switzerland	YES	YES
Comreg	Ireland	YES	NO
Telecommunication Ministry	Cyprus	YES	NO
MCA, Regulator of Malta	Malta	YES	YES
CRC, Communication Regulation Commission	Bulgaria	YES	YES
PFS (Post and Telecoms Authority)	Iceland	YES	NO
Vinnustovnurin, Faroe Islands regulator	Faroe Islands	YES	NO
Servei de Telecomunicacions d'Andorra	Andorra	YES	YES
NKOM	Norway	YES	YES
Generalitat de Catalunya (STSI – Catalunya – Spain)	Spain	YES	NO
Secretaria de Estado de Telecomunicaciones (SETSI – Spain)	Spain	YES	NO
Agency for Telecommunications, Broadcasting and Post (ATRP)	Slovenia	YES	YES
RRT	Lithuania	YES	YES
Ministry of Telecoms/DRI	Azerbaijan	YES	YES
GNCC	Georgia	YES	NO
EKIP	Montenegro	YES	YES
ILR	Luxembourg	YES	YES
Gouvernement Princier	MONACO	YES	NO
UKE (Polish Authority of Communication)	Poland	YES	NO
ENKOM	Switzerland	YES	NO

Authority	Country	Spectrum Planning	Spectrum MGT
Americas			
MINTIC	Columbia	YES	YES
SMA	Jamaica	YES	NO
MOC, Ministry Of Communication	Caribbean	YES	NO
Industry Canada (Regulator)	Canada	YES	NO
Asia & Oceania			
OFCA	Hong Kong	YES	NO
CTT	Macau	YES	NO
AITi	Brunei Darussalam	YES	YES
SARFT, People's Republic of China	China	YES	NO
KCA, Korea Communications Agency	South Korea	YES	YES
ARFM	Vietnam	YES	NO
CRC	Mongolia	YES	NO
MPT	Laos	YES	YES
UNICON	Uzbekistan	YES	NO
NICTA	Papua New Guinea	YES	YES
MBIE	New Zealand	YES	NO
MCMC	Malaysia	YES	NO
OPT	New Caledonia	YES	NO
Africa			
NCC, Nigerian Communication Commission,	Nigeria	YES	NO
Botswana Telecommunications Authority –	Botswana	YES	NO
CA	Kenya	YES	YES
ARTP	Niger	YES	YES
POTRAZ	Zimbabwe	YES	YES
Regulator of Guinea Conakry	Guinea Conakry	YES	YES
ZICTA	Zambia	YES	NO
AIGF	Ivory Coast	YES	NO
Middle-East & North Africa			
ASBU, Arab States Broadcasting Union,	Tunisia	YES	NO
GCC Telecom Bureau - Gulf Cooperation Council Telecom Bureau	Gulf	YES	NO
ANBA, Algerian National Broadcast Authority, ASBU member	Algeria	YES	YES
TDA (Algeria Broadcast Authority)	Algeria	YES	YES
NTRA	Egypt	YES	NO
ARTP	Guinée	YES	YES


References

Use Cases 1

Customer	Description
 <u>L'Autorité de régulation des électroniques et des Postes</u> France Project: Automated Civil Spectrum Management System	<p>Project overview:</p> <p>ARCEP is the French regulatory Authority responsible for issuing licenses, authorisations and managing interference and Quality of Service complaints for fixed, mobile and space services. In a recent audit, the ATDI solution was nominated the best ROI across the organisation.</p> <p>ATDI has worked in partnership with ARCEP for two decades to support their ongoing needs as a regulator, allowing them to optimise the solution to improve efficiency and effectiveness. ARCEP manage and maintain a database of transmitters and licenses and handle recurring administrative tasks such as the management and licensing of fixed and satellite services (VSAT), as well as PMR services in the 2.6 GHz band, billing and fee calculations. ANFR has two distinct licence applications; one for handling stations and the other for frequency assignments, coordination and notifications. The ATDI solution covers every aspect of their spectrum licensing management.</p> <p>The aim of the solution is to simplify ARCEP's processes through automated workflows which were customised to ARCEP's specific requirements. These workflows guide the user through the complete licensing process with ease. This simplified solution not only improved license application times but the overall efficiency of the organisation. HTZ communications (ATDI's radio planning and spectrum engineering tool) is used regularly by ARCEP's engineers to carry out various tasks like coexistence calculations between systems, automatic frequency assignment and interference analysis.</p> <p>The solution also includes an e-Licensing web portal for online applications, called ICS e-Manager. This facilitates online requests and manages licence applications (ADD/MOD/RENEW/SUPP) for fixed services (microwave links), PMR frequency allocations in 2.6 GHz TDD band and features an online fee calculator. The aim of this web portal is to dematerialise application requests for the creation, modification, deletion and renewal of frequencies. The overall impact of this software implementation was:</p> <ul style="list-style-type: none"> • Less paper • Reduction in errors as the operator checks the sites, equipment, and antennas before sending. <p>The project is covered by an ongoing maintenance contract and ATDI supplied extensive training courses for both the spectrum engineering and spectrum management functions.</p>

References

Use Cases 2

Customer	Description
 <p>Authority for Info-communications Technology Industry (AITI)</p> <p>Brunei Darussalam</p> <p>Project: Implementation of Backoffice system to improve efficiency & service delivery</p>	<p>Project Overview:</p> <p>The Brunei national regulator upgraded its back-office systems to improve efficiency and service delivery. AITI has implemented an e-Service solution to transform its paper-based processes into an electronic format. The web-based solution was developed by ATDI for internal/intranet business web portals to manage their regulatory business processes.</p> <p>This solution aimed to automate interfaces with external applications and improve overall effectiveness and efficiency in the internal licensing process for any services, frequency/spectrum, and type approval, import permit, amateur radio, numbering, and complaint management.</p> <p>Several external existing systems integrations were implemented:</p> <ul style="list-style-type: none"> • Spectrum regulation and resource management: ATDI's Automated Spectrum Management System featuring ICS manager + HTZ Communications. • Financial platform: MS Dynamics GP • Online payment integration with the local bank payment system using credit card and EFT options. • Bruneian customs office business web portal for seamless data exchange on Type Approval and Import Permit. <p>Following the initial deployment in 2017, further developments to the business workflows and policies have been implemented, including improvements to the user experience through technologies like QR code and digital signatures. Further changes include improvements to business processes following the new regulatory rules/policies and enhancing the UX/UI.</p> <p>The 2nd phase delivery was completed at the beginning of 2021 and AITI received both training and support for the new system.</p> <p>Supplied continuous training and system maintenance support to date.</p> <p>100% of the project was completed by ATDI</p>

References

Use Cases 3

Customer	Description
 <p>Ukraine State Centre of Radio Frequencies (UCRF)</p> <p>Ukraine</p> <p>Project: Automated Radio Frequency Management System</p>	<p>Project Overview:</p> <p>For the past decade UCRF, the national spectrum regulator for Ukraine, has worked in partnership with ATDI to define workflows to improve their license applications process.</p> <p>The overall system supported functions to process applications including technical analysis, invoicing, fee calculations, license renewals, international coordination and ITU notifications. These were deployed via a standard workflow manager.</p> <p>ATDI's solution is fully integrated with a public-facing portal that provides e-services for citizens of the country, network operators and government bodies. The integration process with the public portal is based on two application servers, one (ICS web query) working in the local area network of regulatory authority and providing a program firewall, which manages the data requests from the second (web portal).</p> <p>The system interfaces with an external government service for user authentication, allowing access to profiles and the data related to companies, organisations and physical persons through secured channels.</p> <p>The supplied system covers every aspect of spectrum management, automates routine processes and interfaces with external governmental services such as the authentication service, registry of private persons and companies. The system also features customisable workflows, reports and integration with engineering modules for the technical assessment of applications.</p>

Thank you!



**11 boulevard
Malesherbes
75008 Paris
FRANCE**



contact@atdi.com



+33 1 53 30 81 41