



Medtronic

Medtronic Builds Digital Heart Monitoring Service with OutSystems

Triage system saves clinical staff time and
ensures better outcomes for patients

A New System for Life-Saving

Heart Monitoring

- Connected healthcare devices can generate thousands of data points. But most healthcare institutions simply don't have the resources to manage this continuous flow of data.
- Medtronic used OutSystems to redevelop its IoT monitoring and triage system. The new system automatically filters data enabling faster treatment for high-priority cases.
- With over 450,000 data transmissions from patients in 13 countries since 2016, the new system has saved 35 years of clinical staff working time.
- As an added bonus, using OutSystems has reduced the IT budget needed for the program by around 50 percent.



85% less data for healthcare professionals to review



50% IT budget saving



>335,000 sessions triaged



15 minutes to onboard new clinics

Medtronic



“

“We wanted a secure platform that would allow us to build the capabilities we needed quickly and easily—and that’s what OutSystems offers.”

Karel Nouwen

Senior IT Director, Digital Business and Digital Health

“This is still a young initiative, but the first results we’ve seen are hugely promising.”

Karel Nouwen

Senior IT Director, Digital Business and Digital Health

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1. Business Challenge

2. Solution Built with OutSystems

3. Outcomes and Results

Business Challenge

Information Overload

Connected healthcare devices can generate and share thousands of data points. But healthcare institutions simply don't have the staff, skills, or tools required to manage this continuous flow of data.

Inefficient Use of Resources

With so much data and little concrete insight to go on, healthcare professionals relying on connected devices often waste time wading through data—time that could be better spent focusing on patient care.

Limited Insight Into Genuine Emergencies

When care providers are overwhelmed with data, it's easy for them to miss the signs of cases that need immediate attention.

Lack of Predictive Analysis

Without a way to sift through the data in front of them, healthcare providers struggle to effectively predict complications—they can only react to them after the fact.

Solution Built with OutSystems

Using OutSystems, Medtronic redeveloped its FocusOn monitoring and triage platform in just six months. And to help protect the sensitive data FocusOn handles, Medtronic uses OutSystems Sentry—a SOC2 Type II compliant cloud platform.



IoT-enabled monitoring



Automated workflows



Data analysis and filtering



Intuitive—new clinics onboarded in 15 mins



Flexible licensing



Cloud security platform



Outcomes & Results



Efficient Operations

With FocusOn, 85 percent of the data collected from cardiac devices are filtered out as normal.

Healthcare providers only need to spend time looking at potentially abnormal results.

Massively reduced workload and high-risk cases are seen faster.



Rapid Onboarding

New clinics can get started with FocusOn in as little as 15 minutes. This was vital, as hospital staff often already use multiple complex systems and have little time for yet more complicated systems. The response from Medtronic's clinics has already been hugely positive, with clinics appreciating the rapid data processing FocusOn provides.



High Data Throughput

Since its launch in November 2018, FocusOn has triaged over 335,000 data transmissions from patients in 12 countries, saving 27 years of clinical staff working time.



IT Budget Saving

Because the solution is built on OutSystems, Medtronic's team can rapidly and simply make adjustments to the platform as their requirements evolve. As an added bonus, using OutSystems has reduced the IT budget needed for the program by around 50 percent.

Medtronic Transmissions Administration User

Classic

New Draft **To be Reviewed** To Call Complete

PDF General Event Summary Customizations

Medtronic FocusOn Report

Medtronic **Reveal LINQ™** **Full Report**

Patient: **Revealed: 18-Sep-2018 08:50:41**

History

Date of Birth: ID: Follow-up Physician: Battery OK

Phone: Reason for Monitoring: Date of Implant: 31-Oct-2018

Current ECG: 18-Sep-2018 08:50:35

Observations
- No new observations

Triage

Classification: Green Amber Red

Report Type: Full Event Summary Preferred

Patient Notes: Patient Notes available

Comments:

Episodes and Reasons Add New Event

EVENTS	DATE/TIME	REASON	MOST RELEVANT
109	DD-MM-YY 07:16:04	Pause -> 3 seconds -< 15 seconds - General	<input checked="" type="checkbox"/>
	DD-MM-YY 07:16:04	The ECG shows sinus rhythm/bradycardia/AF with a prolonged PR-R interval of 10 seconds.	G A R
108	DD-MM-YY 22:39:11	Ignore - General	<input type="checkbox"/>
	DD-MM-YY 22:39:11		G A R
107	DD-MM-YY 23:26:36	Ignore - General	<input type="checkbox"/>
	DD-MM-YY 23:26:36		G A R

Medtronic Transmissions Administration - User - Log Out

CLINIC

- All
- MAAS
- RSO1
- AAAAAA
- 12345
- MRI
- JICLNC
- 23456
- 170119
- ROGG
- TEST
- xxx
- VAR

RECEIVED DATE

From: To:

COLOR CLASSIFICATION

- Not Classified
- Green
- Amber
- Red

REPORT TYPE

- Full
- Event
- Summary
- Preferred
- Undefined

STATUS

- New
- Draft
- To be Reviewed
- To Call
- Complete

2 Red Transmissions | 5 Amber Transmissions | 2 Green Transmissions

PATIENT ID	PATIENT NAME	CLINIC CODE	COLOR	STATUS	DEVICE TYPE	DEVICE SERIAL NUMBER	RECEIVED	COMMENT	LAST MODIFIED BY
ABC 1234	François Boillière	RSO1	Red	To be Reviewed	Reveal LINQ	RLA1113335	02-May-2019 12:39	The ECG shows bradycardia with (...)	
ABC 1234	François Boillière	RSO1	Red	To be Reviewed	Reveal LINQ	RLA1113335	20-May-2017 01:05	The ECG shows sinus rhythm/br (...)	
MAASRNT5	Jan Peck Haas	MAAS	Amber	To be Reviewed	LINQII	RLAPSH0002	23-Oct-2019 02:08	Patient customization reason (...)	
MRI 0456123	IPG Device type	MRI	Amber	To be Reviewed	PM	PHZBA0001	01-Nov-2018 00:17	Patient customization reason (...)	
RSO1 0345612	Lauren Marshall	RSO1	Amber	To be Reviewed	Reveal LINQ	PHP7012345	18-Sep-2018 07:51	Patient customization reason (...)	
RSO1 0545216	Leon Webster	RSO1	Amber	To be Reviewed	Reveal LINQ	RLA0545216	09-Sep-2018 02:05	Clinic customization reason (...)	
RSO1 0261345	Max Jones	RSO1	Amber	To be Reviewed	CRT-D	PHP0612302	07-Sep-2018 13:48	The ECG shows bradycardia with (...)	
ROGGPAT1	Petl Rødg	ROGG	Green	To be Reviewed	Reveal LINQ	RLAP1R0001	20-Oct-2019 02:08	TEXT (...)	
RSO1 799501	Bes Gilbert	RSO1	Green	To be Reviewed	LINQII	RLB001P101	06-Aug-2019 10:51	No details are available for t (...)	

9 records

Medtronic | Theromobooks | Administration | User

Status: **New** | **Draft** | **To be Reviewed** | To Call | **Complete**

PDF | General | Event Summary | Customizations

Search a Reason... | Select a Classification...

TYPE	REASON	CLASSIFICATION
Clinic	Bert Test Reason	G A R
Clinic	Bert Test Reason 2 - Bert Test Reason 2	G A R
Clinic	Bradycardia - Day	G A R
General	Bradycardia - Night	G A R
General	Clinic customization reason	G A R
General	Ignore	G A R
General	New reason test - New reason test	G A R
General	No Details	G A R
General	No Events	G A R
General	Patient customization reason	G A R
General	Patient customization reason1	G A R
Clinic	Patient customization reason1	G A R
General	Pause -> 5 seconds - <5 seconds	G A R
Clinic	Symptomatic episode with no/low priority ECG anomaly	G A R

Triage

Classification: Green | Amber | **Red**

Report Type: Full | Event | Summary | **Preferred**

Patient Notes: Patient Notes available

Comments

Episodes and Reasons: **Add New Event**

EVENTS	DATE/TIME	REASON	MOST RELEVANT
36	02-May-2019 10:08:12	Pause -> 3 seconds - <5 seconds - General	<input type="checkbox"/>
	02-May-2019 10:08:12	The ECG shows sinus rhythm/bradycardia/AF with a prolonged I interval of 5 seconds.	G A R
35	29-Apr-2019 08:02:29	Bradycardia - Day - Clinic	<input checked="" type="checkbox"/>
	29-Apr-2019 08:02:29	The ECG shows bradycardia with a median rate of 50 bpm during day time and a duration of 5 minutes and 10 seconds below brady threshold. Min. 5 rate 5 bpm.	G A R
34	29-Mar-2019 09:55:54	Symptomatic episode with no/low priority ECG anomaly - Clinic	<input type="checkbox"/>
	29-Mar-2019 09:55:54	Symptom	G A R

Medtronic Transmissions Administration User

Status: New Draft To be Reviewed To Call Complete

PDF General Event Summary Customizations **Medtronic FocusOn Report**

Medtronic Reveal LINQ™ Event Report
Patient: Robin Batman
Received: 20-May-2017 00:05:00

Robin Batman History

Date of Birth: 09-Jan-1924 ID: ABC 1234 Follow-up Physician: Battery: OK
Phone: Reason for Monitoring: Syncope Date of Implant: 08-Feb-2017

Event Summary: AF episode (ID# 29)

AF episode
- Detected: 19-May-2017
- Duration: 05:10:00
- Max V. Rate: 316 bpm
- Median V. Rate: 75 bpm

ECG Summary: AF (ID# 29)

Triage

Classification: **Red**

Report Type: Summary

Reported On: 25-Nov-2019 12:00

Clinic Schedule
This clinic is open for phone calls from 10:00 to 19:00

Add New Communication

Contact: Bert HCP HL

Communication Method: **Call** Voicemail

Comment: successful call 12:00 am

Communication Status: Successful Not Successful

Previous Communications

Patient Notes

Comments

Episodes and Reasons

EVENTS	DATE/TIME	REASON	HIGHEST RELEVANT
29	19-May-2017 06:00 - 19-May-2017 15:10	Clinic customization reason	<input checked="" type="checkbox"/>
		Clinic customization reason	Red



Patients

[Upload disconnected patients](#)

Patients Search

Disconnected Patients

Scheduling

Type the Full Name or Patient Identifier

Search

Country

All

Clinic

- All
- FocusOn-MAAS
- FocusOn-HRI
- FocusOn-RDGG
- FocusOn-RSCH
- JIClinic20191022

Patient Name Search

First Name

Last Name

Clear Filters

PATIENT ID	NAME	CLINIC	TOWN	DATE OF BIRTH		
HAASPAT1	Jan Pieter Haas	FocusOn-MAAS	Netherlands	11-Nov-1971	UF	X
HAASPAT3	Jan Pieter Haas	FocusOn-MAAS	Netherlands	11-Nov-1971	UF	X
HAASPAT4	Jan Pieter Haas	FocusOn-MAAS	Netherlands	11-Nov-1971	UF	X
HAASPAT5	Jan Pieter Haas	FocusOn-MAAS	Netherlands	11-Nov-1971	UF	X
HAASPAT6	Jan Pieter Haas	FocusOn-MAAS	Netherlands	11-Nov-1971	UF	X
HAASPAT2	Jan Pieter Haas	FocusOn-MAAS	Netherlands	11-Nov-1971	UF	X
121111	Patient A	FocusOn-HRI	United Kingdom	09-May-1954	UF	X
HRI046122	PG Device type	FocusOn-HRI	United Kingdom	10-Apr-1950	UF	X
JYZ883388	Marga Hazeema	FocusOn-HRI	United Kingdom	03-Sep-1924	UF	X
HRI052466	Amber Waters	FocusOn-HRI	United Kingdom	22-Oct-2019	UF	
RSCH0612345	Elize Turner	FocusOn-HRI	United Kingdom	15-Feb-1995	UF	
P222	Patient Delta	FocusOn-HRI	United Kingdom	21-Oct-1942	UF	X
AAAA7	Patient Beta	FocusOn-HRI	United Kingdom	27-Aug-1949	UF	
RDGPAT1	Pati Reijg	FocusOn-RDGG	Netherlands	11-Nov-1971	UF	
RDGPAT5	Pati Reijg	FocusOn-RDGG	Netherlands	11-Nov-1971	UF	X

1 to 15 of 31 records

1 2 3 next

More Resources:

Case Study

<https://www.outsystems.com/case-studies/medtronic-improves-patient-care/>

Webinar

<https://www.outsystems.com/webinars/low-code-critical-capabilities/>



Thank you.