



People on board: Transforming healthcare by blending agility, responsiveness, and resilience

In digital transformation, GS1 standards in action follow products to patients

Els van der Wilden-van Lier, MD MPD Healthcare Provider Director

GS1 Healthcare Global Office







Presenting



- María Ramírez Gutiérrez, Logistics Manager, Economic Management Directorate; Andalusian Health Service, Spain
- Henrik Stilling, IT Architect Central Denmark Region (including Aarhus University Hospital), Denmark
- Albert Tarrats, Director and administrator Logaritme, logistic platform of the Institut Català de la Salut (Catalan Institute of Health), Spain
- Chair: Els van der Wilden-van Lier, MD, MPH, Healthcare Provider Director GS1 Healthcare Global





Our 'heart' is in healthcare delivery











Key learnings

- 1. Global GS1 standards facilitate efficiency, cost saving and patient safety.
- 2. Experiences during the COVID-pandemic showed traceability and agility.
- 3. Digital innovations in the healthcare supply chain supports cost saving and enhances patient safety and full traceability of medical products.
- 4. The use of global standards supports rationalising assortments and standardisation in clinical procedures.
- 5. The fully traceable product data (from manufacturer to patient) simplifies recallprocesses.
- 6. In the end, using these standards and barcodes empowers the patients.





Do we need standards?







Supply chain medical products to patients







.. complex challenges supported by simple scans ...







GS1 standards enable to automatically and accurately identify, capture and share information about products, business locations and more





Health

Global system of standards to ensure traceability

Identify: GS1 Standards for Identification

GLN Global Location Number GTIN Global Trade Item Number SSCC Serial Shipping Container Code GRAI Global Returnable Asset Identifier GIAI Global Individual Asset Identifier GSRN Global Service Relation Number





Barcode scanning of implants

- Seamless IT-solutions
- Supports stock visibility
- Supports electronic re-ordering
- Traceability within the hospitals
- Facilitates the work of the OR nurse
- Direct uploading in implant registry
- If needed: facilitates recalls
- (Global) product traceability















1: How to make the most effective use of resources by getting the best value

2: Standards – a key building block in Scandinavia's largest hospital in times of a pandemic

3: Efficiency projects with GS1 standards at ICS







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GS1 Standards at the Andalusian Healthcare Service (SAS)

How to make the most effective use of resources by getting the best value

María Ramírez

Andalusian Healthcare Service







Andalusia



87.597 Km2







Andalusian Healthcare Service Structure



- Hospitals 50Beds: 15.132
 - > Operating rooms: 528
- > 1.519 primary care centers





Andalusian Healthcare Service in figures

- Budget of 9.000 million euros
- > 8 million inhabitants
- 22 million tourists
- Largest National Health Service
- > Third in Europe
- Almost 100.00 professionals
- Second company by number of employees nationwide, after ACS.
- > 50.000 suppliers





SAS Logistics Management and GS1

8 provincial logistic platforms



Before



Now





SAS Logistics Management and GS1

- > 8 provincial logistic platforms
- 1 Central Catalog. Demand
- I Product bank. Offers
 - > 300.970 products identified with GTIN (100% medical devices)





SAS Logistics Management and GS1

- > 8 provincial logistic platforms
- 1 Central Catalog. Demand
- I Product bank. Offers
 - > 300.970 products identified with GTIN (100% medical devices)
- > EDI (Order to cash process)
 - ➢ 5 messages: ORDERS, DESADV, RECADV, INVOIC, GENRAL
 - > 300 providers (medical devices, implants and pharmaceuticals)
 - More than 150.000 transacted documents each month.





Benefits achieved from the use of GS1 Standards

- Automatic management and communication (error minimization)
- > Automatic integration of product traceability information
- > Transparency and data quality
- > More efficiency in administrative processes
- Costs and time savings
- Optimization of resources and processes
- Increased patient safety





Name	María Ramírez
Designation, Organization	Servicio Andaluz de Salud
Contact info	maria.ramirez.gutierrez.sspa@juntadeandalucia.es
Website	https://web.sas.junta- andalucia.es/servicioandaluzdesalud/
Social media links	



Contact





People on board: Transforming healthcare by blending agility, responsiveness, and resilience

Standards – a key building block in times of a pandemic Cases from Scandinavia's largest hospital

Henrik Stilling, IT architect

Region Midtjylland, (including Aarhus University Hospital), Denmark





Henrik Stilling





Region Midtjylland

- Lead architect Logistics, Locationing & Identification
- Engineer
 - Process management
 - Technology adaption
- Employed in healthcare since 2008
- Aarhus University Hospital
- Regionshospitalet Gødstrup





THE FUNDAMENTALS









Structural



Information Based





Structured







Information Based





Capability

Systems that **automatically** register **location** and **identity** of a **mobile** object at a known **time**

Systems able to consume the above mentioned informations

What, Where and When

Built on standards



Item identification

- GTIN Global Trade Item Number
- GRAI Global Returnable Asset Identifier
- GIAI Global Individual Asset Identifier
- GSIN Global Shipment Identification Number
- UDI enumeration models approved by EU Traceability (Location)
- GLN Global Location Number

Interoperability

- EPCIS (Electronic Product Code Information Services)
 - Capture
 - Query
 - EPC
- CBV (Core Business Vocabulary)







29 · www.regionmidtjylland.dk

http://www.gs1.org/id-keys



Standards





Standards





Inside the hospitals





Embedded information







Overview and analysis



 $\leftarrow \ \rightarrow \ \models \ \complement \ \Box_{II}$

		mandag	tirsdag	onsdag	torsdag	fredag	lørdag	søndag
15. marts 202	At I		ra	125	2 4		31	17
22. marts 2021	Oge 12	207	21/	210	214	215	21	22
29. marts 2021	Uge 13	133	117	132	28	22	22	24
5. april 2021	Uge 14	24	203	204	215	203	23	26
12. april 2021	Uge 15	226	201	195	219	228	23	20
19. april 2021	Uge 16	212	206	179	196	198	31	20
26. april 2021	Uge 17	210	198	188	197	24	30	21
3. maj 2021	Uge 18	198	202	203	216	208	42	24
10. maj 2021	Uge 19	209	221	186	30	7.1	12	17
17. maj 2021	Uge 20	224	188	186	223	19(
24. maj 2021	Uge 21	24	226	192	224	21:	1 51	32 512
31. maj 2021	Uge 22	163	192	184	193	179	August a	AN PLAT
7. juni 2021	Uge 23	170	177	167	170	174		10
14. juni 2021	Uge 24	195	220	171	175	169		
21. juni 2021	Uge 25	136	139	147	135	147		d -
28. juni 2021	Uge 26	122	109	121	112	110		
5. juli 2021	Uge 27	123	107	112	112	109	- E	
12. juli 2021	Uge 28	104	95	.99	101	95		
19. juli 2021	Uge 29	105	99	87	101	93		
26. juli 2021	Uge 30	93	87	96	86	95	0	20
2. august 2021	Uge 31	87	96	113	85	107		0
9. august 2021	Uge 32	103	91	112	99	114		
16. august 2021	Uge 33	125	109	110	115	127		
23. august 2021	Uge 34	105	116	120	123	113	28	22
30. august 2021	Uge 35	124	161	151	134	136	25	17
6. september 2021	Uge 36	166	165	162	153	148	34	24
13. september 2021	Uge 37	137	153	147	163	139	17	22
20. september 2021	Uge 38	167	161	154	169	145	28	28
27. september 2021	Uge 39	143	161	156	155	154	29	24
4. oktober 2021	Uge 40	150	162	138	150	141	20	23
11. oktober 2021	Uge 41	140	156	128	136	140	31	23
18. oktober 2021	Uge 42	110	99	125	113	101	31	30
25. oktober 2021	Uge 43	148	152	154	152	145	28	5
1. november 2021	Uge 44	75						

		mandag	tirsdag	onsdag	torsdag	fredag	lørdag	søndag
15. marts 2021	19 1/ P	ra	ae	- 1	3.3	KE	0,2	0,3
22. marts 2021	Uge 12	5,9	2,9	5,7	4,8	4,7	30,4	0,2
29. marts 2021	Uge 13	1,3	1,5	1,9	0,5	0,2	0,3	1,8
5. april 2021	Uge 14	1,8	5,8	4,8	10,6	15,8	1,4	0,5
12. april 2021	Uge 15	6,8	1,7	4,3	4,5	5,1	1,4	0,5
19. april 2021	Uge 16	5,2	4,3	6,9	5,0	5,6	1,1	1,2
26. april 2021	Uge 17	3,9	6,1	2,3	4,5	0,3	0,8	1,3
3. maj 2021	Uge 18	4,3	6,9	4,8	3,3	5,0	1,5	0,7
10 mai 2021	Llae 19	6,0	6,3	4,1	1,4	1,1	0,3	0,2
		6,7	6,4	3,3	4,8	4,5	0,2	0,4
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	A DESCRIPTION	12,3	10,6	10,2	8,7	20,1	10,8	0,8
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	A Designation	24,0	29,3	6,4	7,5	9,8	0,8	0,8
	The second	5,0	3,4	4,3	3,2	8,3	0,3	0,2
	A DECISION OF	2,1	3,1	5,4	5,5	3,4	1,5	2,5
		5,6	3,5	2,8	3,3	2,9	0,5	0,4
1 1		1,7	1,7	3,9	3,0	0,8	0,3	0,2
1 1 1	0	2,9	2,3	1,3	1,7	0,9	0,5	0,3
		1,4	0,9	1,2	0,8	0,5	0,4	0,2
		0,3	1,9	1,9	0,5	2,4	1,4	1,5
		1,3	2,8	3,1	2,5	5,5	2,7	2,8
		4,2	1,0	4,3	4,3	3,7	2,3	2,2
23. august 2021	Uge 34	4,3	3,8	3,4	3,6	5,5	2,5	2,6
30. august 2021	Uge 35	7,7	8,7	7,6	7,4	8,1	1,1	1,3
6. september 2021	Uge 36	7,0	13,8	3,7	5,7	8,7	1,7	1,6
13. september 2021	Uge 37	15,0	8,8	7,3	6,8	6,9	1,5	1,1
20. september 2021	Uge 38	9,5	6,3	9,0	8,2	2,3	1,5	1,0
27. september 2021	Uge 39	10,8	8,3	7,5	7,0	9,4	0,4	0,7
4. oktober 2021	Uge 40	5,8	4,6	3,6	6,8	7,6	1,9	1,3
11. oktober 2021	Uge 41	8,1	10,7	3,0	6,7	3,3	0,7	0,5
18. oktober 2021	Uge 42	3,0	2,0	4,8	4,5	2,4	0,5	1,1
25. oktober 2021	Uge 43	5,4	5,8	6,8	9,0	6,7	1,0	1,2
1. november 2021	Uge 44	9,2						

S519

Uren buffer ved Sterilcentralen - ankommet pr. døgn

	dII	manag	irs ar	or id a	orsdig	erig	lørdag	søndag
22. oktober 2018	Uge 43		142	131	145	110	27	16
29. oktober 2018	Uge 44	155	147	119	140	129	21	13
5. november 2018	Uge 45	159	132	112	131	130	10	27
12. november 2018	Uge 46	144	146	138	121	126	22	25
19. november 2018	Uge 47	256	191	115	126	105	23	15
26. november 2018	Uge 48	123	144	136	109	138	17	37
3. december 2018	Uge 49	82	82	90	88	92	12	15
10. december 2018	Uge 50	134	121	141	126	128	20	16
17. december 2018	Uge 51	111	153	117	138	104	25	12
24. december 2018	Uge 52	14	13	20	84	80	22	23
31. december 2018	Uge 01	31	21	114	125	128	24	20
7. januar 2019	Uge 02	135	145	142	119	111	29	22
14. januar 2019	Uge 03	132	126	144	129	112	21	29
21. januar 2019	Uge 04	129	141	157	144	128	13	18
28. januar 2019	Uge 05	135	144	160	129	141	23	24
4. februar 2019	Uge 06	169	151	142	140	145	23	19
11. februar 2019	Uge 07	107	99	122	88	120	24	28
18. februar 2019	Uge 08	150	138	132	142	134	20	20
25. februar 2019	Uge 09	225	175	146	140	135	23	19
4. marts 2019	Uge 10	171	168	140	167	148	34	25
11. marts 2019	Uge 11	173	163	144	167	146	19	27
18. marts 2019	Uge 12	164	167	144	163	156	26	23
25. marts 2019	Uge 13	185	151	159	160	137	24	19
1. april 2019	Uge 14	173	175	155	170	155	27	19
8. april 2019	Uge 15	186	187	186	140	111	27	53
15. april 2019	Uge 16	107	100	106	45	32	19	32
22. april 2019	Uge 17	25	215	137	151	170	30	21
29. april 2019	Uge 18	163	162	30	181	158	27	21
6. maj 2019	Uge 19	163	166	147	162	138	29	18
13. maj 2019	Uge 20	168	152	154	177	39	32	16
20. maj 2019	Uge 21	174	156	144	150	150	32	34
27. maj 2019	Uge 22	167	161	137	39	76	33	28
3. juni 2019	Uge 23	153	162	144	151	132	21	30
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Uren buffer ved Sterilcentralen - gns. antal pr. døgn

	lve	63	t s qu	or B Z	ritag	Fre aO	rrig	søndag
22. oktober 2018	Uge 43		45,0	46,3	71,0	89,4	14,2	38,
29. oktober 2018	Uge 44	36,8	74,8	73,6	73,1	97,8	104,1	70,
5. november 2018	Uge 45	60.9	107,5	114,1	111,5	119,4	119,8	88,
12. november 2018	Uge 46	73,9	95,6	109,8	125,1	105,0	101_6	67.
19. november 2018	Uge 47	67.1	111,7	110,2	119,6	132,6	151,2	126,
26. november 2018	Uge 48	101.1	116,5	117,5	139,8	132,8	124,5	109,
3. december 2018	Uge 49	65,0	17,6	2,6	3,9	6,0	2,4	0,
10. december 2018	Uge 50	8,1	16,0	22,5	25,9	28,1	6,1	0,
17. december 2018	Uge 51	6,6	8,9	22,3	26,5	19,7	4,9	0,
24. december 2018	Uge 52	0,0	0,0	0,5	1,9	5,8	0,5	0,
31. december 2018	Uge 01	2,3	4,2	2,4	7,7	5,8	1,4	0,
7. januar 2019	Uge 02	8,6	13,5	14,8	22,8	23,2	21,0	12,
14. januar 2019	Uge 03	15,3	28,5	47,5	73,2	66,8	51,3	14,
21. januar 2019	Uge 04	12,8	13,3	10,3	26,2	40,1	23,0	2,
28. januar 2019	Uge 05	15,5	27,3	34,4	33,2	34,2	26,8	16
4. februar 2019	Uge 06	14,6	44,5	51,3	60,3	65,2	61,1	36,
11. februar 2019	Uge 07	7,3	6,6	26,7	21,9	21,1	24,6	6.
18. februar 2019	Uge 08	16,1	16,1	17,0	28,2	38,0	18,0	5,
25. februar 2019	Uge 09	18,2	33,6	19,8	24,1	32,9	29,1	7,
4. marts 2019	Uge 10	18,9	27,5	37,5	52,3	77,5	63,1	26,
11. marts 2019	Uge 11	22,2	40,9	42,6	36,6	45,3	43,6	10,
18. marts 2019	Uge 12	14,5	52,0	56,3	47,4	61,2	75,4	51,
25. marts 2019	Uge 13	40,1	69,6	74,9	95,5	84,6	57,3	21.
1. april 2019	Uge 14	21,9	64,8	72,9	101,9	117,2	86,4	68
8. april 2019	Uge 15	55,4	73,1	96,3	105,8	113,9	98,3	58.
15. april 2019	Uge 16	46,4	46,8	63,0	79,3	50,1	14,8	3
22. april 2019	Uge 17	2,9	34,0	44,6	47,8	73,6	62,1	23,
29. april 2019	Uge 18	24,4	66,1	58,2	10,6	27,7	44,3	31
6. maj 2019	Uge 19	34,3	40,5	37,2	56,7	74,3	72,4	30,
13. maj 2019	Uge 20	21,3	23,6	34,6	58,7	51,3	29,7	3
20. maj 2019	Uge 21	17,9	52,6	58,5	70,0	72,6	67,5	50
27. maj 2019	Uge 22	57,3	81.0	65,5	46,3	23,0	5,1	1
3. juni 2019	Uge 23	21,4	34,6	30,3	35,0	47,7	37,7	16



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Vision

From

"Who did what"

То

"Who can do that"

Benefits



- Transparency
- Quality Assurance
- Scaleability
- Not just a healthcare method
- For everyone









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Name	Henrik Stilling
Designation, Organization	Region Midtjylland, (including Aarhus University Hospital), Denmark
Contact info	Henrik.stilling@rm.dk jkf@gs1.dk
Website	www.regionmidtjylland.dk

Social media links







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Efficiency projects with GS1 standards at ICS

Albert Tarrats,

Director and administrator Logaritme - Institut Català de la Salut (Catalan Institute of Health)





What is the ICS?





ICS – The Hospitals

INSTITUT CATALA DE LA SALUT UN MODELO DE COMPRA CENTRALIZADA





ICS in figures

Atenció primària

Recursos estructurals

Centres d'atenció primària	335
Consultoris locals	622
Centres d'urgències d'atenció primària (CUAP)	20
Punts d'atenció continuada (PAC)	132
Dispositius d'atenció aïllats o de muntanya	20
Dispositius d'atenció especialitzada	28
Serveis de diagnòstic per la imatge	30
Laboratoris clínics	2



Atenció hospitalària

Hospitals	8
Quiròfans	144
Unitats de reanimació / punts d'atenció	21 / 178
Unitats de cirurgia major ambulatòria (CMA)	9
Sales de parts	24
Consultoris de consultes externes	1.340
Punts d'atenció d'hospitals de dia	487
Boxs d'urgències / punts d'atenció	409 / 653
Laboratoris clínics (territorials / urgències)	8
Equipaments d'alta tecnologia	201
Llits disponibles	3.747
Unitats de salut internacional	3



Purchasing strategy

ARGOS PROJECT – 2007 - CENTRALIZED PURCHASE Tools

- Single catalog
- Cross-cutting information system (SAP)
- A new organizational model for centralized purchasing and contracting functions
- A cultural change in healthcare organization
- A unique and own logistics operator (Logaritme)



Logistics activity

Order lines

* LOGARITME (Logistics operator) : 160.320

* LOCAL PURCHASING: 213.579 -Laboratory (IVD): 62.921 -Prostheses and Implants : 122.523 -Medical Devices: 28.135



A Strategical decision – Implementation of GS1 Standards

- EDI at the logistics operator LOGARITME
- EDI at HOSPITALS
- GDSN project (LOGICSDATA)



Implementation of EDI at the Logistics Operator LOGARITME Chronology

- **2007** send all orders to supplier by fax mail and first EDI messages
- **2010** replacement fax email by EDI online. incorporation of new ORDER messages (SUPPLIER'S RESPONSE)
- **2011** request to supplier (ORDERS) response to request (ORDRSP) dispatch notice (DESADV) confirmation of receipt (RECADV)



Implementation of EDI at the Logistics Operator LOGARITME

The data we have today

	2019									
MOTH	KIND	SUPLEIERS	ORDERS	ORDRSP	DESADV	RECADV	INVOIC	TOTAL		
	EDI	193	121.184	87.982	121.257	110.392	6.347	447.162		
TOTAL	WEB EDI WITH CONTRACT	117	60.620	61.443	43.787	40.083	0	205.933		
TOTAL	WEB EDI WITHOUT CONTRACT	129	7.085	291	90	72	0	7.538		
	TOTALS	439	188.889	149.716	165.134	150.547	6.347	660.633		

2020									
MOTH	KIND	SUPLEIERS	ORDERS	ORDRSP	DESADV	RECADV	INVOIC	TOTAL	
TOTAL	EDI	191	137.334	112.991	132.276	117.276	21.090	478.193	
	WEB EDI WITH CONTRACT	110	63.571	62.877	45.769	37.730	3.049	189.751	
	WEB EDI WITHOUT CONTRACT	112	6.485	32	2	0	0	5.921	
	TOTALS	413	207.390	175.900	179.648	153.110	13.080	729.128	

	2021 (31/10/2021)								
мотн	KIND	SUPLEIERS	ORDERS	ORDRSP	DESADV	RECADV	INVOIC	TOTAL	
TOTAL	EDI	192	126.816	85.345	120.815	109.695	23.563	394.773	
	WEB EDI WITH CONTRACT	114	58.259	54.072	40.939	34.930	4.524	160.117	
	WEB EDI WITHOUT CONTRACT	117	6.246	98	8	0	0	5.450	
	TOTALS	423	191.321	139.515	164.696	140.180	11.438	647.150	



Implementation of EDI at Hospitals

Replacement of the current system for sending orders via fax / mail by a global standardized system - EDI.

Optimization of the processes associated with the manual treatment of documentation, avoiding errors in orders, delivery notes and invoices.



Implementation of EDI at Hospitals

FASE 1

- Bellvitge Hospital
- Message EDI orders Prostheses

FASE 2

- All Hospitals
- Message EDI orders Prostheses

FASE 3

All Hospitals

Message EDI orders – All products

Ended by 2020

Ended by June 2021

Ended by February 2022

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ICS published the EDI Guidelines: describes the communication model for EDI valid for all ICS centers and providers

The sections of the guide include:

- Contact details for suppliers
- Code, description and address of the operational points
- (logical addresses)
- ICS central operational point
- Operational point of each center
- Operational point of each merchandise delivery point
- Messages to be exchanged by EDI (ORDERS, ORDRSP, DESADV, RECADV)
- Details of information and format of each of the messages
- Procedures to follow when handling messages

Process overview for prosthetic circuit





Implementation of GDSN - LOGICSDATA PROJECT

Public Health Organization

Purchase by tenders

In centralized contracting, more than 10,000 offers are managed per year



GDSN - LOGICSDATA PROJECT

- The successful bidders must <u>compulsorily</u> maintain the data of the logistics attributes required in the application of the standardized Electronic Technical Sheet system of any GDSN catalog (Global Data Synchronization Network).
- The GDSN catalog provider of the successful bidder must be in charge of delivering to the ICS the logistics attributes of the items awarded in the file, to the FTP address indicated in the characteristics table, in the format detailed in tender.



GDSN - LOGICSDATA PROJECT

Required attributes:

File number Weight conservation temperature Quantities of each grouping Mark Traceability Type of danger Security file

Dimensions

Management unit of measure **GTIN** of all aggregation levels Reference Model Product image Dangerous goods class Delivery expiration



Name	Albert Tarrats
Designation, Organization	Logaritme serveis logístics aie
Contact info	atarrats@logaritme.net
Website	www.logaritme.net
Social media links	





Summary: our 'heart' is in healthcare delivery











Healthcare is moving towards: increasing standardisation technology remote & more digital e-health



How do we overcome barriers?





Barcode scanning in preparation of a surgical procedure

Noel Burch 1970





Foundation of GS1 Keys

Provides access to information held in computer files – Information about company/location, package, product, price, shipment, assets etc.







Healthcare professionals: backbone of care

'Support-staff' is essential in healthcare Success does not come overnight, yet involves:

- Strategic decisions & consistent vision
- Involvement and engagement of relevant staff
- Integrated supply chain, and integration with clinical areas
- Be mindful of interoperability of processes and systems
- Consistent step-by-step approach
- Implement (global) GS1 data standards for supply chain & the visibility of medical supplies in the hospital / health service





Questions and discussion





Some useful resources: https://www.gs1.org/industries/healthcare https://www.ihf-fih.org/ihf-beyond-covid-19-task-force/ https://youtu.be/RUMSSr7HEsY https://www.gs1.org/docs/healthcare/Publications_position-papers/GS1-IHF-09-HD-Final.pdf







THANK YOU – contact details

https://www.gs1.org/industries/healthcare

Els.vanderwilden@gs1.org / Claire.Clarke@gs1.org Monica Soler: msoler@gs1es.org Albert Tarrats: atarrats@logaritme.net Maria.ramirez.gutierrez.sspa@juntadeandalucia.es Henrik.stilling@rm.dk / jkf@gs1.dk

