HL7 EUROPE NEWS

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NEWSLETTER

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Contents

by Jeremy Thorpe

Editorial

Health services across Europe are facing similar challenges, but also similar opportunities.

The challenges are well known, with pressures of the ageing society, the increasing incidence of chronic conditions and constrained budgets. In response, many countries are focussing on improving health and wellness, and seeking to prevent ill-health, thus enabling more patients to live at home rather than be treated in hospital. Alongside this is a strong impetus for the patient to become much more active, empowered and engaged in their care. The digital age has arguably arrived late in the healthcare domain, and yet is now enabling access to data and services.

All these developments have placed a higher importance on measures for achieving interoperability within organisations, between organisations, and across different care settings. In Europe, the work of the European Commission and the eHealth Network (comprised of both the EC and 28 Member States) has also addressed the issues of cross-border care. This work, seen through projects such as epSOS, thematic networks such as Antilope and now Expand, has framed this interoperability in the context of four domains: the legal / regulatory, organisational, semantic and technical.

There are many issues still to face, some being addressed through Horizon 2020 projects such as OpenMedicine (looking at identification of pharmaceutical products), AssessCT (appraising the suitability of SNOMED CT to support terminology requirements) and Valuehealth (building the business model for sustainable ehealth). Alongside these, the eHN is about to oversee the start of a new Joint Action initiative which, over the next three years, will progress a series of standardisation and implementation issues with a view to creating a sustainable European Infostructure for health.

From a demand perspective, this activity should provide much-needed support for those wishing to implement digital

Looking at identification of pharmaceutical products: OpenMedicine

www.open-medicine.eu/openmed/

solutions. From a supply perspective, this should create an environment in which suppliers can enter the market and compete across Europe.

Europe of course is not alone in this situation. The joint working with the US – for instance through the Trillium Bridge project – has underlined the many similarities, but also highlighting some different approaches.

HL7, as an international organisation, is well-placed to help support this activity, given the many years of experience in developing interoperability standards. All stages in the lifecycle need support.

The first stage would include, from a user perspective, the development of new standards to support emerging areas such as care at home, patient-initiated care and population health. At the same time, it is clear that much more work is required in support of confidentiality and privacy, with verification and authentication of identity, the recording of patient consents (who has access to data about me?) and personal preferences.

The second stage will see the process of maturing those standards with supporting implementation guidance, support for testing and conformance mechanisms. Areas where such work might be seen are the stabilisation of Fast Healthcare Interoperability Resources (FHIR) and support for cross-sectoral building blocks being developed in Europe through projects such as eSens for eID, eSignature, etc.

The third stage will see the effective and widespread use of integration facilities, which in turn will hopefully be able to demonstrate the benefits to care, in terms of quality, efficiency and improved outcomes.

These activities will be a joint effort, with other standards groups such as IHTSDO, CEN and IHE. One route for contributing will be through the *HL7 European Strategy Advisory Board (ESAB)*, established by the European HL7 Foundation Task Force and European HL7 International Affiliates. The objective of ESAB is the alignment of the European HL7 affiliates' strategies and policies in areas that are relevant for the Affiliates and/or their members, particularly with respect to their situation in Europe and advise the European HL7 Foundation in relation to its European wide activities. The agenda is both complex and exciting, but if we are able to ensure that Member States, together with all stakeholders, are able to make progress, it will be immensely satisfying and worthwhile.

Jeremy Thorp

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by Catherine Chronaki

eStandards: a focal point for large scale eHealth deployment

Large-scale and sustainable deployment of eHealth services across organizations or jurisdictions would favor cost-efficient, consistent, and accelerated implementation of standards that advance interoperability.

The eStandards project selected for funding by the European Commission has been proposed by HL7, CEN/TC 251, IHE, EuroRec, OFFIS, and other leading organizations for eHealth standards and specifications development and adoption in Europe. It is supported by the European eHealth Network of European Member State representatives established under Article 14 of the EU Directive on patients' rights to cross-border care as well as ISO/TC 215, GS1, IHTSDO, IEEE, EFMI, and IMIA to advance eHealth interoperability and global alignment of standards and specifications.

The two year project starting on May 1, 2015 aims to join up stakeholders across Europe and globally to build consensus on creating interoperability across different (possibly overlapping) eHealth standards, accelerate knowledge-sharing, and promote wide adoption of standards.

In an evidence-based Roadmap, eStandards targets alignment, iterative consolidation, and broad acceptance of eStandards, elaborating the European eHealth Interoperability Framework use cases with clinical content modelling for different paradigms and embeding a Quality Management System for interoperability testing & certification of eHealth systems. The project team will collect evidence and will provide guidance on the coexistence of competing or overlapping standards in large-scale eHealth deployment, whether regional, national or cross-border.

The eStandards Roadmap and associated evidence base expected in 2017, a white paper on the need for formal standards, and two guidelines addressing how to work with: (a) clinical content in profiles and

(b) competing standards in large-scale eHealth deployments aspire to be pragmatic steps toward their alignment and convergence of eHealth standards.

Interoperability tools play a critical role in this context as they hold promise of optimizing the entire interoperability standards lifecycle as introduced in the eHealth Interop report:

- Identification of a use case or set of requirements
- Selection of supporting interoperability standards, with the selection of options
- Implementation, conformance testing, certification
- Deployment in projects, which closes the feedback loop from the real world.

Along with interoperability tools, a Quality Management for testing and certification of eHealth solutions as well as structured meaningful evidence of best practices can drive large scale eHealth deployment. Underlying aspiration is changing the language of interoperability toward a culture of co-creation and mutal trust between traditional purchasers and the health Information Technology industry (see figure 1).

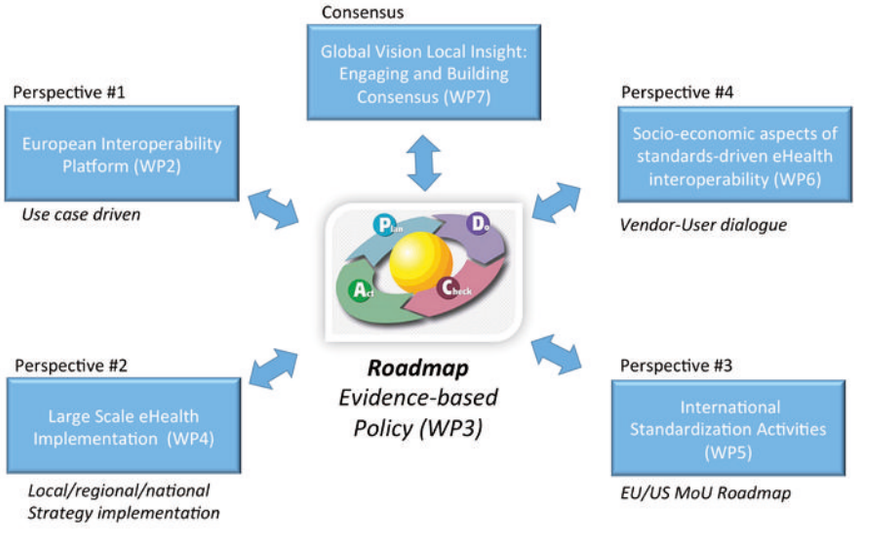

Figure 1: Integrating evidence and cultivating a culture of quality management in eStandards.

In this way, eStandards aims to nurture innovation, sustainability and growth under the emerging Connecting Europe Facility contributing to the Standards and Interoperability pillar and specific key actions of the Digital Agenda 2020 in Europe. Its ultimate ambition is to strengthen Europe's voice and impact, while reinforcing the bridges established with the EU Patient Summary guideline across the Atlantic in Trillium Bridge and among European Union Member States with initiatives such as epSOS, eSENS, Antilope, and EXPAND.

For more information contact: euoffice@HL7.org

Catherine Chronaki

Secretary General, HL7 Foundation, Brussels, Belgium

by Sylvia Thun

Assessing SNOMED CT for Large Scale eHealth Deployments in the EU

Semantic standards like terminology systems are key resources to improve data interoperability and reuse and maximise value from clinical data, in order to optimise care and minimise harm in care delivery. The ASSESS CT project, integrating a broad range of stakeholders, will investigate the fitness of the international clinical terminology SNOMED CT as a potential standard for EU-wide eHealth deployments.

In a joint one-year effort, ASSESS CT will address this challenge by investigating a number of issues related to the current use of SNOMED CT such as concrete reasons for adoption/non adoption of SNOMED CT, lessons learned, success factors, type and purpose of use, multilingualism, cultural differences, strengths and weaknesses. ASSESS CT will review - using literature review, survey, interviews; focus groups and workshops - the current state of use of SNOMED CT and the fulfilment of semantic interoperability use cases, known technical and organisational drawbacks, and the way the terminology is improved and maintained.

The consortium will analyse the impact of SNOMED CT adoption from a socio-economic viewpoint, encompassing management, business, financial, organisational, and governance aspects. ASSESS CT will provide both the European Commission and the EU member states with a portfolio of best practice approaches to the adoption of SNOMED CT, including prerequisites, critical success factors and methods to overcome technical, legal, organisational and human factor barriers. It will delineate the gaps in the availability and licensing of SNOMED CT and derived assets such as value lists, translations, tools, and in the market, regarding EHR system capability, educational resources, analytics. Available evidence, hypotheses, expert and user opinions will be synthesised into useful policy recommendations to support scaling up successful adoption of SNOMED CT and maximising value from coded clinical data.

Knowledge gaps for aspects of SNOMED CT such as its suitability for clinical use and its use across language and cultural borders require further investigations. Small, focused studies using sampled clinical data will provide new evidence about conceptual and term coverage for selected languages, as well as technical fitness in manual and automated

semantic annotation scenarios. The costs for enrichment of SNOMED CT by non-English content will be estimated based on cost estimates for adding and validating interface terms. Fitness to clinical requirements will be examined by assessing term and concept coverage and coding agreement in clinical use cases such as for structured and unstructured patient summaries. The additional evidence is expected to have a significant impact on future policy dialogues and strategic planning.

Three scenarios will be followed:

- ADOPT: SNOMED CT as pan-European eHealth interoperability standard
- ALTERNATIVE: interoperability without SNOMED CT
- ABSTAIN: no EU level action taken.

The consortium will collect real-world experiences representing these scenarios, will create new evidence and will assess the impact on different stakeholders including patients and healthcare providers, for cross-border as well as national and regional strategies.

Alignment with priorities and perspective of the eHealth Network will be sought through a Committee of Member States' representatives. Validation of all working tasks will be ensured through four large workshops with distinguished experts assembled in an Expert Panel and national focus groups. Coordination across the parallel H2020 Call PHC34 interoperability projects will be sought. Alignment with EU-US interoperability activities will also be ensured.

The project team is composed of 14 organisations (see table 1).

Table 1: The ASSESS-CT project team

Organisation	Country
University of Applied Sciences Niederrhein	Germany
HL7 International Foundation	Belgium
Medical University of Graz	Austria
Averbis GmbH	Germany
European Institute for Health Records	France
empirica Gesellschaft für Kommunikations- und Technologieforschung mbH	Germany
Academisch Medisch Centrum, Universiteit Amsterdam	Netherlands
Nictiz National IT Institute for Healthcare in the Netherlands	Netherlands
Regione Lombardia, General Directorate for Health	Italy
Aalborg University	Denmark
Linköping University	Sweden
INSERM LIMICS	France
Croatian Health Insurance Fund	Croatia
National Institute for Health and Welfare	Finland

ASSESS CT receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 643818.

More information is available at: www.assess-ct.eu.

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by José Costa Teixeira

Supply of Healthcare Products

Part 1 – A vision for Global integration

This short article describes how global standards - HL7 and GS1 - are being put together to support a safer supply chain from the manufacturer to the patient.

The supply of products as part of healthcare

Many healthcare activities include - implicitly or explicitly - the provision of products. Medication, radiology contrasts, syringes, infusion pumps, stents, pacemakers…

The provision of these products is not just an administrative act; it implies a series of clinically relevant aspects - traceability, drug- or device-safety; it also implies a range of activities from the procurement to the tracking of products, including the different workflows of ordering, consignment, unplanned administration, traceability, recalls…

Procurement departments and pharmacies must put considerable effort in managing these operational and clinical aspects, while supporting the specifics of each clinical domain.

Only by articulating these aspects can they support the clinical needs while improving operational efficiency. Standardization must support this articulation.

Emerging needs

The relevance of supply and its impact on the clinical aspects is getting strong awareness. Authorities are regulating traceability, product recalls, detection of falsification with item serialization, etc., which impacts care processes in a growing manner.

The FDA is mandating for the UDI - the Unique Device Identifier - as a means to enable the registry and identification of medical devices. In Europe, there is awareness about the need for serialization, to enable the tracking of each single product dose.

The interested parties on all sides (software vendors, product suppliers, authorities and care providers) must provide solutions. But how to deal with these needs across so many different workflows, business models, or product types?

Cross-domain standardization

Standardization must facilitate integration across domains. Some examples:

- In Pharmacy, the product circuit is fully tracked starting with an order and ending with administration,
- In Operating Theaters, products in consignment are consumed before ordered and charged,
- In diagnostic procedures, anesthetics or contrasts are typically documented only for administrative purposes and are seldom linked to the clinical aspects.

Analyzing each of these challenges and implementing domain-specific solutions is one way to solve the issues. The same HL7 standard can help solve each of these cases. But how to preserve integrity of patient care, billing, procurement, etc. across these domains? At the end of the day, using a standard should not only be a matter of formal compliance, it also should enable effective integration.

An analysis is showing that these aspects can actually be seen as common needs, and that a standard Supply interoperability framework is possible.

International needs

Several countries have issued internal guidance for the use of standards in supply. Some may be restricted to specific use cases (e.g. consignment items) or parts of the workflow (e.g. the procurement process) or some enabling aspects (e.g. the use of barcodes).

Since no single national framework provides the flexibility to enable the complete set of scenarios (due to the breadth of the scope), an international framework is required, to cover different cases and needs.

Using Global standards

While global standards exist, their adoption is just not yet globally uniform. Guidance is needed.

HL7 provides the *de facto* standards for clinical processes. This means that all interoperability aspects of clinical product ordering (e.g. pre-

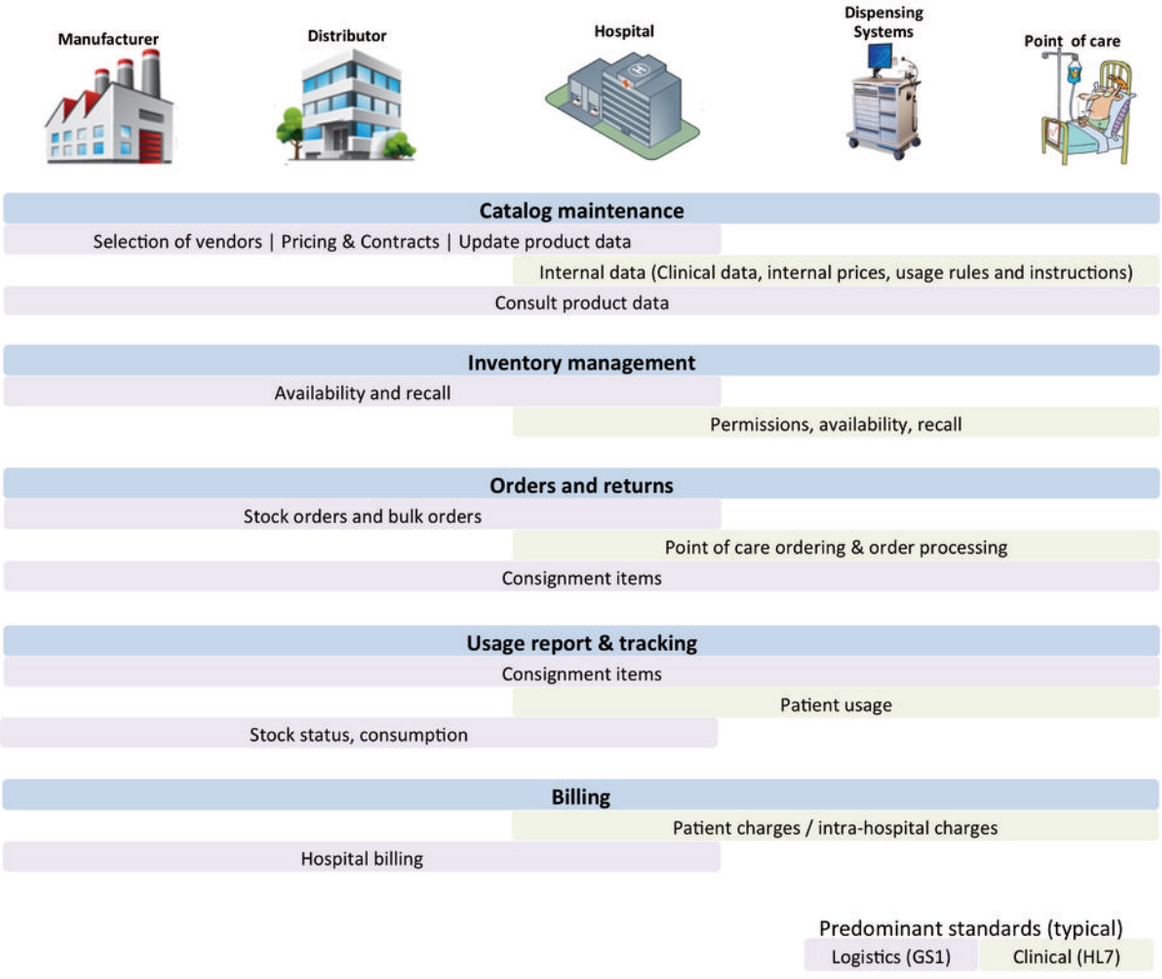

Figure 1: Preview of scope and features of the project

scriptions) and administration can be covered by HL7. With its implantation and scope, HL7 supports well the many clinical processes.

GS1 develops and maintains global international standards for supply messaging and for AIDC (Automatic Identification and Data Capture). GS1 provides interoperability standards (messages) and coding standards (e.g. GS1 barcode format and content) which address the operational aspects in support of the clinical needs. Its use has been profiled in several countries and in a variety of material to support the healthcare needs.

In October 2013, HL7 and GS1 renewed their 2007 Memorandum of Understanding (see http://www.gs1.org/docs/media_centre/gs1_pr_141013_HL7.pdf), which underlines the collaboration between the two institutions to promote the use of both standards as a guarantee of efficient and effective health care.

One common standard framework

In order to address all the variations described here, and to enable the continuity of flow and availability of data, a common standard framework is needed. This common framework will streamline the interoperability needs while supporting all the clinical and operational variances.

- The mechanism to order products from a vendor must be compatible with all the upstream and downstream activities.
- The data provided upon product delivery or administration must be

consistent, whether the standard is HL7 v2, FHIR or CDA, or GS1 for the supply chain transactions and identification.

- The product identification should be provided from the production to the use or administration at the point of care, by using the same standard (GS1), and must be consistent with different identification processes (manual or automatic identification)
- …

This common framework is being prepared today. A preview of the scope and features is in figure 1.

The result: a global standards profile

The supply of products being an explicit need in Pharmacy workflows, IHE Pharmacy has produced international profiles for the clinical flows since 2010, while deliberately keeping open the dependencies on a Supply framework. IHE is now closing those dependencies. This work was initially incubated in Pharmacy and is now shared across domains.

The next major step is a white paper which clearly describes the topic and elicits the requirements for a global, standard interoperability framework.

For more information, please contact pharmacy@ihe.net.

José Costa Teixeira

Healthcare and IT consultant and designer, Ghent, Belgium

ART-DECOR & IHE Europe

The *ART-DECOR Expert Group* and *IHE Europe* recently signed an Memorandum of Understanding to establish and develop the collaboration between the two groups in order to jointly promote the adoption of respective and complementary open-source offerings and evolve them in a synergistic way.

The agreement applies specifically to the **ART-DECOR Framework** and the **IHE Gazelle ObjectsChecker**. The vision is to engage the broadest group of eHealth projects and vendors around the world to adopt and use the combination of the two tools in order

- to facilitate the creation and consistent standardized documentation of CDA based specifications and
- to support rigorous compliance validation and testing.

The overall goal is to provide these projects with easy-to-use efficient combined tooling that enhance the quality of their implementations and information exchange.

For more information see art-decor.org and www.ihe-europe.net.

Dr Kai U Heitmann (ART-DECOR) and Eric Poiseau (IHE Europe)

by Karima Bourquard

Adoption and take up of the Antilope results by projects in Europe and internationally

Between 2013 and 2015, the Antilope project was focused on the dissemination and adoption of the eHealth European Interoperability Framework (eEIF) as defined by the eEIF study (also known as the "Deloitte study") published in July 2013 (available at https://ec.europa.eu/digital-agenda/en/news/ehealth-interoperability-framework-study). Antilope developed guidelines and recommendations that support the eEIF. They are available on www.antilope-project.eu.

Based on the results of previous European projects (HITCH and EHRQTN), Antilope developed a consistent framework that will help projects or implementers to deploy their own interoperable solutions. It consists of several interrelated elements that will need to be used at different stages of a project, e.g. specifications, implementation and high level of quality in the testing processes.

The challenge for Antilope was to define a comprehensive, usable framework that enables the development of a unified market and improves the quality of the projects and solutions in eHealth.

Key Antilope results are:

- The refined eEIF in version 1: Based on the eEIF study (2013), the Antilope framework offers tools that can be used in solving interoperability problems with respect of interoperability consistency over Europe. First of all, it proposes a level scheme, listing the multiple aspects of interoperability that projects need to take care of. Furthermore, it proposes a set of use cases and their implementation described by the corresponding realization scenarios which are linked to a selection of profiles (positively evaluated by the European Multi Stakeholder Platform on ICT Standardization in Nov 2014). Each profile is an implementation guidance specification for the underlying standards for a concrete and interoperable implementation.

Antilope
Advancing eHealth Interoperability

- The Quality Management System for Interoperability Testing: The Quality Management System (QMS) for interoperability testing consists of a customizable description and a set of templates. It allows Conformity Assessment Bodies e.g. testing laboratories, to provide high quality test reports when the QMS is implemented as described.
- A coherent set of Testing tools: Antilope provides a portfolio of testing tools that would be sufficient for testing the recognized profiles from the eEIF, and developed an inventory of recommended existing open source testing tools. Key information is provided: target profile tested by tool, tool name, tool developer, tool location and tool info pages and access to source code and category of tools. Finally, Antilope identified gaps and proposed a process to address those.
- Quality label and certification processes: Antilope provides organizational models, concrete examples and guidance that can be implemented both at the European level and at the national/regional level to preserve consistency at each level. Specific recommendations are presented based on the reusability of the testing plan, test cases and test tools. Extensions are allowed and a number should be leveraged at the European level for their integration in newer versions of the eHealth European Interoperability Framework.

The Antilope results are now available for EU projects already in progress, and for future projects linked specifically to PHC34 of Horizon 2020 (and possibly others) to implement and deploy.

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IHE-Europe

www.ihe-europe.net

by Catherine Chronaki, Marc Lange and Silvia Bottaro

eHealth Governance Initiative eHGI

Impact Assessment of the eHealth Governance Initiative

This study reports on the perceptions of eHealth stakeholders on the impact on the work of the eHealth Governance Initiative (eHGI) as presented in the biannual meetings of the eHealth Network (eHN) established under Article 14 of Directive 2011/24/EU Patients' rights in cross border healthcare. eHealth stakeholders include members of the eHealth Network, members of eHGI, and others that are directly or indirectly involved in the work of eHGI. From approximately 200 individual experts that were invited to respond to the questionnaire, 50 responses were received. Preliminary results from the analysis of these responses highlight the importance of interoperability standards and the patient summary guidelines in particular. They also underline the limited concern of decision makers with legal issues. Numerous comments provided make the case for more thorough baseline analysis at the onset of the next instrument to support the eHealth Network.

Seven priority areas were considered in this assessment, namely: Electronic identification, Semantic and Technical Interoperability, Legal and data protection issues, Patient summary guidelines, ePrescription guidelines, Patient online access, as well as the Future multiannual workplan of the eHealth Network and the Connecting Europe Facility (CEF).

A questionnaire was prepared by the impact assessment team in the period June-July 2014 and piloted within HL7, HOPE, ATNA, and EHTEL. An online version of the questionnaire was prepared by HOPE. Approximately 200 invitations were sent to: past and current members of eHGI, the eHN, the eHealth Stakeholder Group. Furthermore, the questionnaire was circulated among the members of the network of associations like HL7 and EHTEL as well as EU project consortiums such as Antilope. 48 responses were received from 20 August to 12 October 2014. Another 2 responses were received from 15 October to 31 October 2014 but have not been included in this analysis due to time constraints for the delivery of this report.

The respondents were invited to respond anonymously and on their behalf, not on behalf of their organization, in order to capture their personal perception and assessment of eHGI. For each of the priority areas, the respondents assessed their level of awareness and their perceived importance of the work. They also reported on relevant actions taken or planned by their organization towards using the relevant eHGI work. Finally, they were asked to rate the different priority areas in terms of importance.

The preliminary analysis of results highlights the importance and necessity of the eHGI work for placing eHealth issues at the highest level in the political agenda of the European Union. At the same time, it underlined the need for further synergies and collaboration complemented by systematic dissemination activities. The respondents to the questionnaire offered a wealth of comments and suggestions to be taken into account in the eHealth Network Joint Action, the eHGI follow-up initiative that starts later in May 2015. The new initiative should start with a thorough analysis of these comments and suggestions in a solid effort to take into account the expectations of the eHealth stakeholders in Europe.

Taking a closer look, on the question on **personal awareness**, responses can be considered as indication of the topics which are of interest to respondents. There is a clear focus on cross-border issues more so than on exchange of good practices. Priority use cases matter to wide audience offering "attraction power". Finally, the time and engagement of the eHGI spent on specific topics has an influence on the answers, e.g. better awareness on Patient summary than ePrescription.

On the question on **perceived impact**, the European Patient Summary Guideline is the clear winner not only on perceived impact but also on actions taken by organizations as well on expected future actions. However, while impact on European Member States is low and on Europe considerable, global impact is questionable as shown in figure 1 and 2.

That raises the question: *What actions should we take towards a stronger European voice worldwide?* Having foreseen that, the new eHN Joint action has a workpackage dedicated to global impact.

On **current and prospective actions** by their organizations a clear indication on the readiness to take the work further was identified. Patient

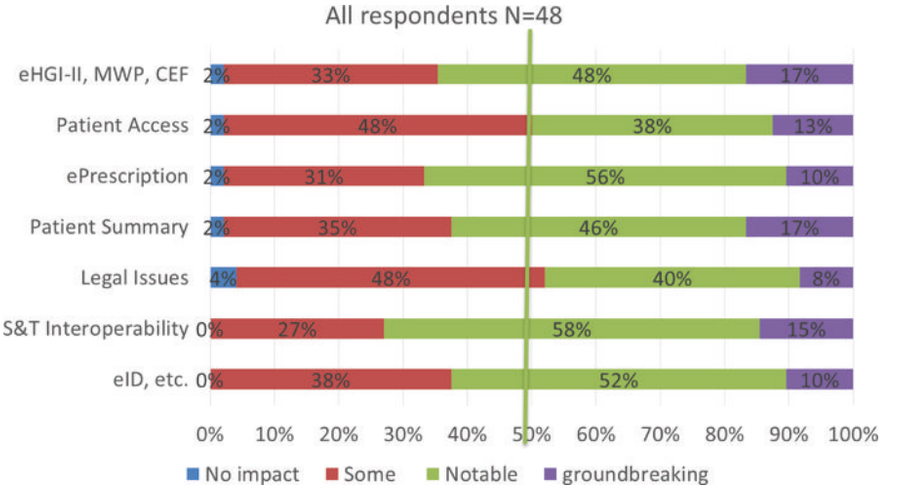
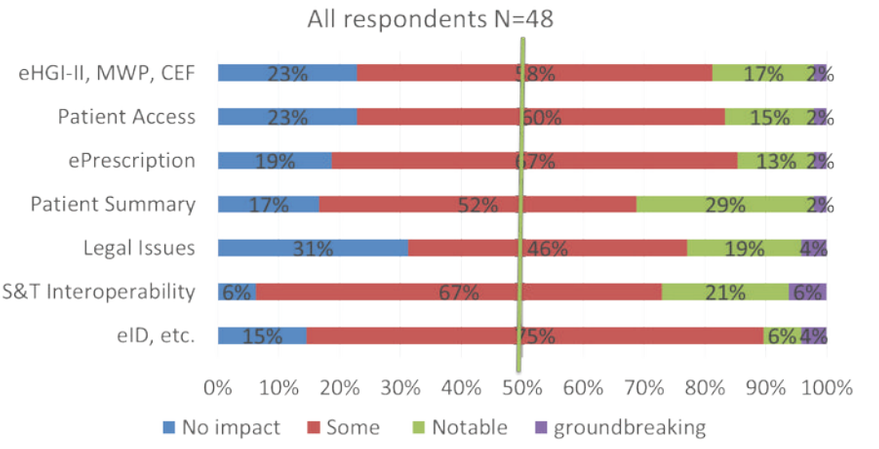


Figure 1: Perceived impact of eHGI work for Europe

Figure 1: Perceived global impact of eHGI work



summary is the clear preference across groups. Additional priority domains were Interoperability and ePrescription.

Least interest in action is for "legislation" raising questions: *Why? Expertise? Maturity? Bias?* Perhaps this overall low level ranking triggers questions on the maturity / prioritization of policy areas to work on in the eHN and the type of expertise that needs to be attracted and cultivated for large scale eHealth deployment in Europe. Perhaps it calls also for multidisciplinary work so that eHealth innovation can be readily absorbed by the society, creating business opportunities for global engagement.

So, where do we go from here? The bar is set high for the eHealth Network Joint Action and the participating group of government entities and competence centers is eager to move forward, addressing the issues that need to be tackled for large scale eHealth Interoperability to become a reality in Europe.

Catherine Chronaki, Secretary General, HL7 International Foundation

Marc Lange, Secretary General, European Health Telematics Association (EHTEL)

Silvia Bottaro, EU Policy Advisor, European Hospital and Healthcare Federation (HOPE)

OPENMEDICINE

Meeting the challenge of open access to medicinal products: openMedicine

by Jos Devlies and Karl A. Stroetmann

A core goal of this European "Coordination and Support" action is to globally advance the unique identification of medicinal products and to enhance the safety of cross-border healthcare delivery through interoperable ePrescriptions. The epSOS project (Smart Open Services for European Patients - Open eHealth initiative for a European large scale pilot of patient summary and electronic prescription) solved the message transfer problem, but encountered two serious "delivery" problems: the univocal identification of medicinal products (MPs) to be dispensed in another country, and challenges arising when it becomes necessary to substitute for therapeutic and economic reasons a medicine prescribed in another country.

Through this project, global standards development organisations SDOs

- World Health Organisation – WHO,
- Health Level 7 – HL7,
- International Health Terminology Standards Development Organisation – IHTSDO,
- International Organisation for Standardisation / European Committee for Standardisation (Centre Européen de Normalisation) – ISO/CEN,
- Global Standards 1 – GS1,
- the European Union Medicines Agency – EMA,
- EU Member State Competent and Regulatory Authorities,
- major stakeholders (industry, health professionals, patients) and
- partners in the USA

will harmonise their respective efforts to deliver

- common data models - expanding upon epSOS and existing standards (ISO/IDMP) - for prescribed MPs
- a common meta-vocabulary for unambiguous definition, description, and identification of MPs
- rules to harmonise practices of therapeutic and economic substitution
- a roadmap for post-project actions and implementations
- policy recommendations for the EU-USA eHealth road mapping process.

Work will link to and develop upon related earlier activities of SDOs, epSOS, European Union policy and regulatory processes (like those undertaken by the eHealth Network of all Member States), and three other eHealth interoperability projects funded under the "personalising health and care" (PHC 34) focus of the European Commission Horizon 2020 Programme to support research and innovation.

As a first step, the project develops a concise conceptual framework to guide its further work, in particular use case scenarios where the identification of an MP is an issue, including pharmacological and pharmacokinetic attributes, clinical indications and risks to be considered. Next, core work addresses the identification and description of pharmaceutical products, not only for standard pre-packed regulated medicinal products, but also for some special cases like MPs with multi-components, biologics, or special packaging as well as those cases where a prescription for a medicinal product only specifies a cluster or class of products. Furthermore, investigations are undertaken to clarify what attributes are needed for reverse identification of a medicinal product, e.g. in toxicology..

A parallel work strand maps national rules and regulations in all Member States for therapeutic and economic substitution and explores options for harmonisation of these rules across the Union.

Each track develops a set of concrete solutions and road map recommendations, validated by experts in face-to-face meetings and workshops.

Over the whole duration of the project, it involves and actively encourages the participation of further national competent authorities, SDOs and stakeholders not part of the core team as well as individual experts. This is to assure the practicability, acceptance and trust in the solutions developed.

The study lasts two years involving 8 beneficiaries and about 25 expert organisations. Its overall budget is about € 1m.

The core project team is composed of these eight organisations:

Participant organisation name	Country
empirica Gesellschaft für Kommunikations- und Technologieforschung mbH	DE
Custodix NV	BE
Health Products Regulatory Authority	IE
Health Ministry of Regional Government Lombardia	IT
Health Level Seven International (Europe)	BE
Instytut Logistyki i Magazynowania	PL
Nederlands Normalisatie Instituut (for European Committee for Standardization (CEN))	NL
Agencia Española de Medicamentos y Productos Sanitarios Parque Empresarial	ES

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OpenMedicine website: www.open-medicine.eu

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The Functional Profile for the Nationwide EHR-S (Fascicolo Sanitario Elettronico)

by Giorgio Cangioli

An update about the Italian Experience

As described in a previous article (see "Nationwide EHR design in the real world as an Ultra-Large-Scale system. Step one: Functional models at work By Stefano Lotti and Cristina Galeazzi in HL7 EU Newsletter #4 Mai 2014, p12-14), the availability of a comprehensive and understandable framework to guide the subsequent technical specifications is a key point for the realization of a nationwide EHR service. In this scenario Functional Models play a crucial role, even more in a context - like the Italian one - where the healthcare system is strongly decentralized, with regional EHR systems developed independently. In February 2013 HL7 Italy with most of the Regional Administrations (19 out of 21 regions) and other public institutions promoted an interregional group with the objective of defining a common functional model for the national (interoperable regional) EHR system(s). The realized Functional Profile has been therefore published by HL7 Italy as informational document and an extract of it has been adopted by the mandatory Na-

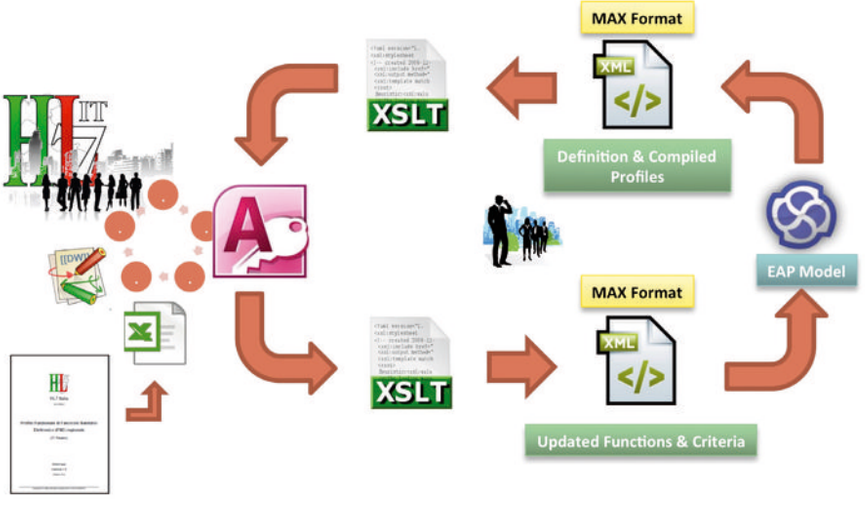
tional Guideline for EHR planning published by the Agency for Digital Italy (AgID) and the Health Ministry as the basis for implementations and interoperability (March 2014).

After this publication a formal standardization process has been started within HL7 Italy, including: (a) a formal revision of the profile according to the ISO HL7 EHR-S FM conformance clauses ; (b) the refinement of the translated glossary with consequent linguistic alignment of the functions and of the conformance criteria; (c) the usage of a tool for modeling the functional profiles in UML.

The UML model (the EAP Model in the figure) created and maintained using the Functional Models Profiling tool has been chosen as the "reference" artefact for the specification of the profile for the Fascicolo Sanitario Elettronico. This model is edited only by the coordinator of the project, all the other teamwork activities (distribution, revision and update of the contents) has been realized by means of excel files, word documents; wiki spaces and Access database.

The bidirectional alignment between the UML model and the Access DB (used for generating all the needed reports and document distributed within the team) has been realized through MAX (Model Automated eXchange) files (see figure 1).

Figure 1: Management Process



As the profile has been finalized (the project lasted about 9 months) a ballot package including several formats (pdf, excel, html) (see figure 2) – (mostly) automatically generated from the reference UML model – has been published (December 2014). This result has been achieved (publication in Italian) localizing the publication tool made available by the HL7 EST WG; ad hoc transformations has been moreover applied to overcome some tool shortages on supporting the non-English languages (see figure 3). Note: this version of the tool has been designed for English-based profiles.

The early adoption of this tool developed by Results 4 Care B.V. as part of the tooling strategy of HL7 International, not initially conceived for supporting translations, has been one of the main challenge. However, thanks to the support provided by Result 4 Care and by the HL7 EHR WG, we succeed in proving the feasibility of adopting this tool also for non-English profiles. Further steps need however to be made in that

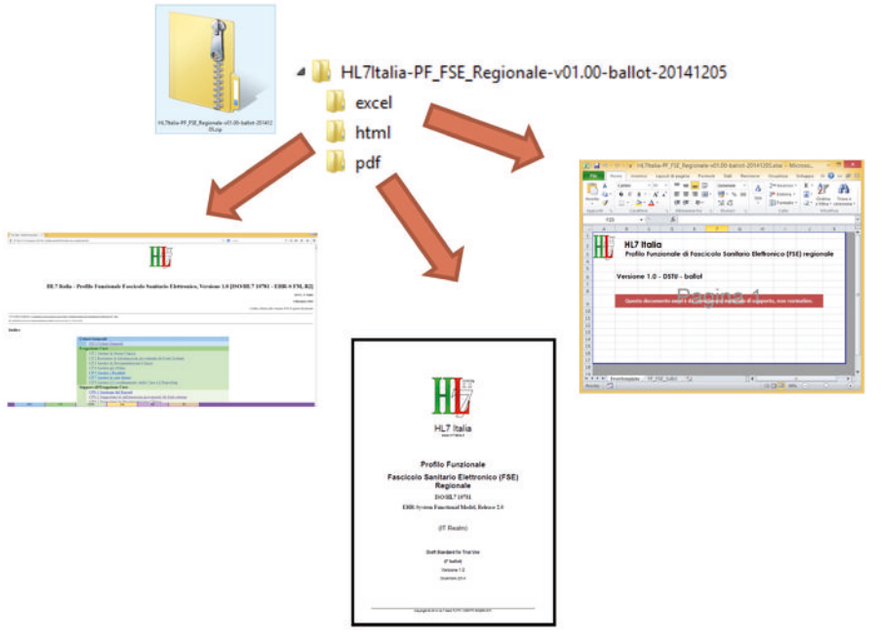


Figure 2: Ballot Package for the Functional Profile for the Fascicolo Sanitario Elettronico

direction. Note: this will be part of the approved Phase three of the Functional Model tool.

The package has been balloted within the Italian REALM and most of the identified issues have been reconciliated. The profile is expected to be published as standard in the Italian REALM as soon as the few remaining issues will be overcome, with the start of the Functional Model tool phase three project in HL7.

Through this project we experienced the added value of the usage of this tool in term of ensuring compliance with the EHR-S FM R2 standard, contributing to the consistent expression of system functionality and enabling, beyond the actual profile development, the comparison of profiles for consistency and the reuse of artifacts.

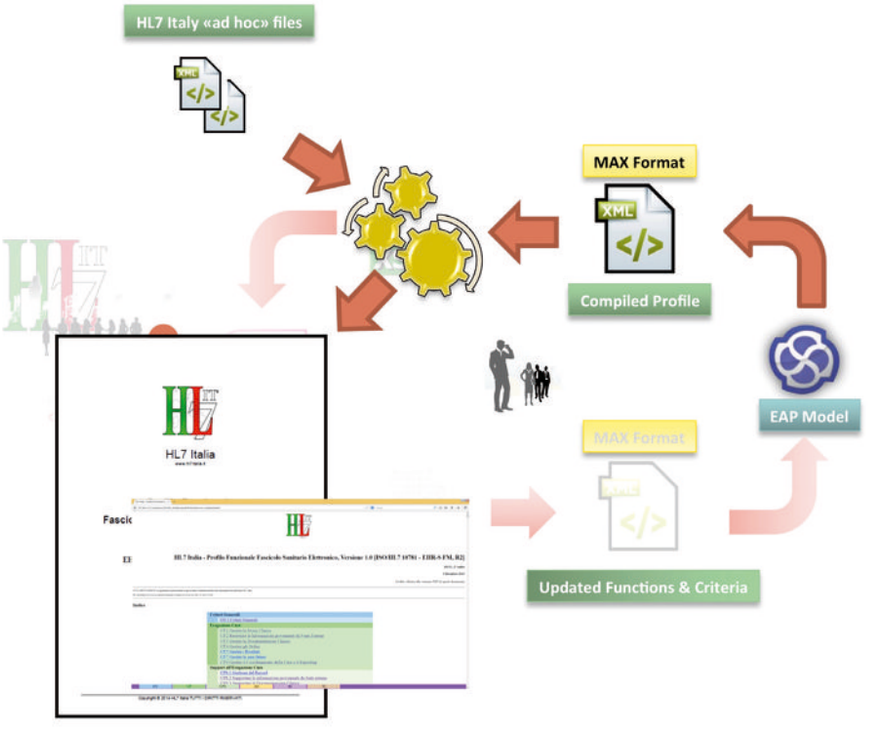


Figure 3: Generation of the published artifacts - Functional Profile for the Fascicolo Sanitario Elettronico

The availability of computable specifications would moreover facilitate the systems certification process, the exchange of artifacts between the European countries and stimulate the cooperation among them: could be this an enabling factor for a companion functional profile for the European Patient Summary ?

Giorgio Cangioli

HL7 Italy CTO

HL7 Int. Affiliate Representative at TSC

by José Costa Teixeira

Medication Lists – an interoperability challenge

The problem of "knowing a patient's medication list" is one of the most pervasive aspects of clinical processes. The outcome of many activities - whether diagnostic or therapeutic - can be influenced by the patient taking a specific medication. A common and illustrative case is the differential diagnosis for a stroke, where knowing the medication taken (or not) by the patient is decisive.

Since the publication of the IHE Pharmacy white paper, which contained the requirements for interoperability in the medication circuits, this problem has been acknowledged as a fundamental interoperability requirement - for a healthcare professional to create or review a prescription, they should know the patient's medication history.

Since the first issue of IHE Pharmacy profiles – which intentionally left this topic open – IHE Pharmacy and HL7 are accelerating collaboration on this matter.

The goal: Providing information to the professionals:

In a more "traditional", non-interoperable manner, a physician can be expected to retrieve the patient's medication list and document it in the notes.

With the emergence of an interoperable medication circuit, supported by HL7 and IHE, it is expected that some information is available elsewhere: Not only in the form of a summary (Medication history is a common part of any clinical summary), but also as detailed data about the prescriptions, dispenses, administration…

These approaches - data capture by the clinicians and list retrieval - have advantages and disadvantages.

To support these approaches in terms of interoperability, and ensure patient safety through informed decision making, a few work fronts are being explored:

- Definitions of "Medication lists"
- Collecting data for such lists
- Content of the list – What is in a list

Method	Advantages	Disadvantages
Clinician capture	Simple	Information exchange must consider context for which it was captured (e.g. specific pathology, or short time frame): Not easily interoperable
	Context-aware: the important information is asked for the case at hand	Context dependent: information that may exist and be relevant may not be captured
		Advantages (simplicity and context-awareness) are reduced when list is reused.
Collecting and providing information	Potentially comprehensive	Requires existence of repositories.
		Number and type of repositories add to complexity
		Requires harmonization, reconciliation…
		Not easily interoperable in its presented form

Table 1: advantages and disadvantages of the two approaches: data capture by the clinicians and list retrieval

Common Definitions of "medication lists"

When addressing this issue, several concepts are present in the literature and in the normative material.

Several materials were pointing to a detailed definition of the content of the list, but the basic concepts and types of lists were not agreed upon.

At first we should have a common understanding what is meant by concepts such as a medication list, a medication profile or medication management.

These concepts and definitions have been discussed and described in a document called "Medication Management concepts and definitions". This document is now being submitted to ISO TC215 WG 6 as a proposal for a joint project between ISO TC215, HL7 and IHE to be accepted as a Technical Report.

Collecting data

There are no central systems for the patients' medication repositories. While several mechanisms exist to gather data, the problem was still present: medication lists were not easily interoperable across contexts.

There are many questions open: what information should be captured? Can we include patient-issued statements with digital prescription records? Are allergies included or excluded? And previous diagnoses? How to handle privacy matters on sensitive data? What decisions to keep or hide information belong to the interoperability layer or the presentation layer?

A White paper is planned for this season in IHE describing this data and how it is exchanged and used.

Content of the list

The awareness that a "Medication list" is not a readily available element, but may be constructed from existing data, has allowed to successfully bypass inconclusive discussions about the content of "THE medication

list". In fact, the early thesis has been that "**there is no single, universal medication list that fits all purposes**". Instead of discussing whether the necessary data is prescription or dispense data, it is acknowledged that both may be sent, and the processes of aggregation, processing and visualization handle all necessary transformations. This allows proper, semantically consistent interoperability at last.

Advancing on this topic, IHE Pharmacy has published the PML - Pharmacy Medication List. This structured CDA document contains the "raw" data components, which can then be used for many purposes: getting the list of prescriptions, having a view of what has been prescribed and dispensed (which can be used to infer what the patient is taking), etc.

However pilot projects based on the PML identified several gaps in this list: what about medication that are neither prescribed nor dispensed (e.g. bought through another channel)? How to represent the issuance over the time of several prescriptions for the same medication?

This led to the creation of an additional component: the **Medication Treatment Plan**, a container that models the notion of planning / introducing a new medication into the medication treatment plan of the patient. Introducing this "initial step" in the medication workflow also provides a way to represent relationships between several treatment activities – planning, prescriptions, dispenses, changes in the intake planning, etc. MTP items being not mandatorily followed by prescriptions and dispenses enable a more exhaustive representation of what the patient is known to be taking.

When these three fronts have been covered (or more, if more interesting problems appear) we can expect to aim for interoperable medication repositories. As subjects of care in a growingly digital and complex environment, the opportunities are too close and too important for us to miss it.

On behalf of the members of the IHE Pharmacy work group:

José Costa Teixeira, Ghent, Belgium

Dr Sc. Stéphane Spahni, Hôpitaux Universitaires de Genève, Switzerland

Dr Jürgen Brandstätter, codewerk, Austria

Michael Tan, Nictiz, The Hague, The Netherlands

Dr Kai U. Heitmann, Germany

New Implementation Guide balloted

Discharge Letter Germany

by Christof Geßner

A new Implementation Guide for clinical discharge letters was balloted by the membership of the German HL7 Affiliate by the end of 2014. Under the name "Arztbrief 2014" this specification is actually an updated version of a previous German CDA R2 implementation guide published already in 2006. An industry-lead initiative proved the usability of this earlier version: a significant number of healthcare-IT vendors demonstrated their capability to implement the specification and exchange CDA documents between their EHR systems. CDA-based discharge letters are used in practice in a number of pilot and routine scenarios across the country.

In the last years we saw a number of CDA IGs being developed, published, and used in other European countries [1, 2]. Due to the common language, the Swiss and Austrian versions had many similarities with the German "Arztbrief"-IG, they actually re-used some of the structures and constraints of the original German project. However, technology and tooling around CDA had developed quite a bit since 2006.

One of the novelties of the newer IGs was the move from model-oriented specifications towards template-based specification seen in the Austrian ELGA project. This ist best understood as a change from specifying "deep" document components specifically constrained for a specific task, e.g. procedures or lab results, towards a layered approach where "flat" rulesets focus on the requirements at a specific level of detail. Such rulesets or "templates" are developed on four different levels:

- Document template: what kind of document is this, what is the purpose and the intended use? What information shall or should be included in the document's sections?
- Header templates: how to include the various document metadata, such as author, patient, contact information, date and location of encounter? Which codes and identifiers are to be used?
- Section templates: What is the intended use of this section? Which information is mandatory or optional here? Which sub-sections shall, should or may be included? Can the narrative section content be accompanied by machine-readable information?
- Entry templates: How can the information be conveyed in a structured, machine-processable way? Which code systems and value sets are to be used?

This approach provides the implementer with a set of instructions that can be used for coding the reading, writing and validating of a CDA instance with relative ease. At the same time, it enables the development and discussion of the guide at each level of detail within the document. Also, the various "building blocks" of the specification can be used, re-used and replaced independently of the neighboring templates. Moreover, as templates are basically just a set of rules, they can be combined

and layered, i.e. a part of the CDA might be conformant to a ruleset A and a ruleset B simultaneously. In this way the Arztbrief is designed as a collection of modules that should be re-usable in future projects. As there is no way of knowing all the requirements of a subsequent project, this appears to be an approach that maximises the efficiency of developing implementation guides and implementations.

The specification was completely developed using ART-DECOR [3] as a tool for templates, specification of value sets, and vocabulary binding. For balloting the IG the content was transferred to our HL7 Wiki and subsequently a PDF document was generated as a "snapshot" of the specification, in order to provide a document ready for ballot. For future extensions and even for new IGs where a smaller number of new templates could be combined with existing ones, we are considering a move towards a template-based balloting process.

The specification contains a large number of example "XML-snippets" to support implementers (see figure 1), also more explanations were added together with a separate section describing typical use cases and some storyboards.

The guide contains normative templates on document, header and section level (see figure 2). Also contained are a number of entry templates. However, the majority of the latter are not normative content of the IG. They were included to provide informative examples – to support advanced developers and foster discussions about the specification of this kind of structures and their use.

There is a close alignment of the IG with the corresponding specifications in Austria that were previously published as part of the ELGA project [1].

	Benutzt von Template-Id	als	Name	Version
	1.2.276.0.76.10.1013		Arztbrief *Arztbrief*	2014-08-25
	Benutzt Template-Id	**als**	**Name**	**Version**
	1.2.276.0.76.10.90012	Inklusion	AssignedEntityElements	DYNAMIC
Beziehung	Spezialisierung: Template 2.16.840.1.113883.10.12.106 (*2005-09-07*)			

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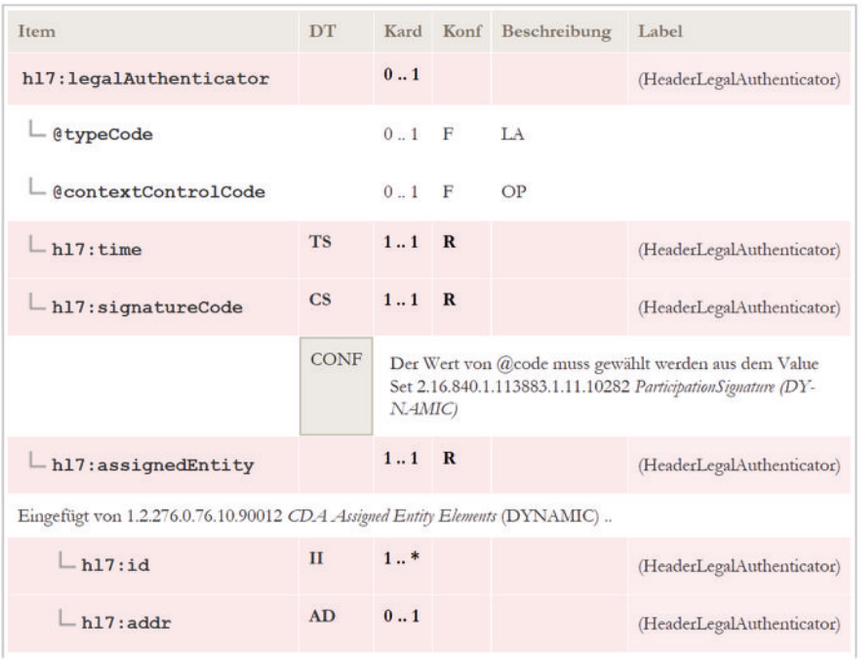
<legalAuthenticator typeCode="LA">
  <time value="20130327130000"/>
  <signatureCode code="S"/>
  <assignedEntity>
    <id extension="a00123456" root="1.2.276.0.76.3.9.8.7.6"/>
    <assignedPerson>
      <name>
        <prefix qualifier="AC">Prof. Dr.</prefix>
        <given>Hugo</given>
        <family>Reinhardt</family>
      </name>
```

Figure 1: Template representation in the German "Arztbrief" PDF implementation guide with metadata and XML snippets



Item	DT	Kard	Konf	Beschreibung	Label
hl7:legalAuthenticator		0 .. 1			(HeaderLegalAuthenticator)
@typeCode		0 .. 1	F	LA	
@contextControlCode		0 .. 1	F	OP	
hl7:time	TS	1 .. 1	R		(HeaderLegalAuthenticator)
hl7:signatureCode	CS	1 .. 1	R		(HeaderLegalAuthenticator)
	CONF	Der Wert von @code muss gewählt werden aus dem Value Set 2.16.840.1.113883.1.11.10282 *ParticipationSignature (DYNAMIC)*			
hl7:assignedEntity		1 .. 1	R		(HeaderLegalAuthenticator)
Eingefügt von 1.2.276.0.76.10.90012 *CDA Assigned Entity Elements* (DYNAMIC) ..					
hl7:id	II	1 .. *			(HeaderLegalAuthenticator)
hl7:addr	AD	0 .. 1			(HeaderLegalAuthenticator)

Figure 2: Template details in the PDF implementation guide, directly derived from the Template created and maintained in the ART-DECOR tool

While ELGA used the earlier German Arztbrief-IG, our recent version uses ELGA results in turn. So we see a give-and-take type of development here: Specifications are developed in close collaboration between European HL7 affiliates.

Currently, this is an incremental process where one specification is developed after another, re-using some of the established results. In future, we envisage an even closer collaboration between the European Affiliates with their relatively similar requirements: The process of creating a new IG could be based on a repository of templates that are jointly developed and used as a common base for localizations of various European affiliates. With the imminent requirement of cross-border exchange of patient summaries and electronic prescriptions between the EU member states this could also be a constituent of a pan-European "source-of truth" that enables interoperability across borders and languages.

Dr. Christof Geßner

Chair, HL7 Germany

References

[1] ELGA - die elektronische Gesundheitsakte: CDA-Implementierungsleitfäden http://www.elga.gv.at/index.php?id=implementierungsleitfaden

[2] HL7 Schweiz: Austrittsberichte http://www.hl7.ch/publikationen0.html

[3] ART-DECOR: http://art-decor.org

by Philip Scott

Patient summaries for transfers of care in the English NHS: clinically-led information standards

Background: Clinical leadership of information standards

Health and social care information technology projects have typically been technically-led not clinically-led and this has frequently been identified as a significant risk factor. By analogy, the development of information standards is as much at risk from lack of clinical leadership as the design and deployment of software.

In an attempt to bring clinical leadership to the production of standards for UK patient records, NHS Connecting for Health and the Royal College of Physicians (RCP) ran a joint project on generic medical record keeping standards. This resulted in the first version of standards for the content and structure of patient records, published in 2008 by the Academy of Medical Royal Colleges (AoMRC). Following that, a Joint Working Group was set up by the Department of Health to resolve the governance of multi-professional standards. The Joint Working Group made a series of recommendations, including the observation that "Technical standards alone do not ensure the ability for information systems to transfer interpretable health data around the NHS". It was also recommended that a new group should be formed, provisionally called the "Professional Records Standards Development Body" (PRSDB), to continue and extend the work of developing and assuring professional guidance for patient record content and structure across all care disciplines in the UK.

Technical standards alone do not ensure the ability for information systems to transfer interpretable health data around the NHS

The Professional Records Standards Body for health and social care (PRSB) was formed in 2013, with the stated objectives: "to ensure that the requirements of those who provide and receive care can be fully expressed in the structure and content of health and social care records." The founder members were a wide group of medical and nursing royal colleges, National Voices (an umbrella patient group organisation), the Allied Health Professions Federation, the Association of Directors of Adult Social Services and the British Computer Society (BCS). PRSB also has representation from the Health and Social Care Information Centre (HSCIC), the Scottish Government, NHS Wales and the North-

ern Ireland Department of Health, Social Services and Public Safety. PRSB has endorsed the latest revision of the standards for the content and structure of patient records (HSCIC & AoMRC, 2013).

Progress so far in 2014-2015

In January 2014, PRSB asked the BCS to initiate a project to address the viability of a conformance scheme. The aims of this project were found to coincide with the interests and objectives of the EU-funded Semantic HealthNet thematic network, which offered to partly fund the work. A report of this project was presented at IHIC 2015 in Prague, Czech Republic, and subsequently published (Scott et al., 2015). This work included a comparison of structure and content with the epSOS patient summary.

The learning from this project laid the groundwork for several work packages funded by HSCIC in early 2015, notably the first phase of an electronic discharge summary standard. This is part of a longer-term plan to develop message specifications for a discharge summary and other use cases of the clinical standards, which will enable implementation on electronic health records and communications. The initial use case was restricted to discharges from acute hospital to general practitioner (GP). Formally the scope is limited to England, given the funding source, but the project has sought to adopt a UK-wide approach. The process is illustrated in figure 1.

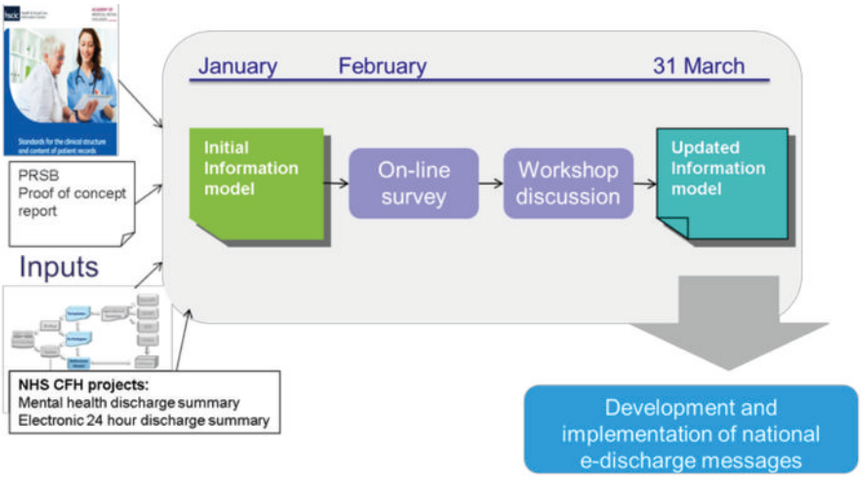


Figure 1: Project process

e-Discharge progress

The scope for this phase was defined as covering the following headings from the existing standard: patient demographics, GP practice, referral details, admission details, discharge details, reason for admission, diagnoses, procedures, clinical summary, allergies and adverse reactions, person completing record and distribution list. The medication heading was deliberately excluded as another project is working on the detail of that information model.

The project has reached out to vendors and NHS implementers to learn from previous work and get a reality check on the implementability of the proposed outputs. At the time of writing, we have a nearly-final version of the first phase information model, documented using mind

maps, spreadsheets and openEHR archetypes. The archetypes will be the basis for CDA templates to implement the actual exchange representation of the content. All draft work will be openly published for comment.

The aim in 2015-16 will be to complete the detailed information models for the whole discharge summary, produce implementable CDA specifications based on those models and extend the scope to other transfers of care. Time did not permit in the first phase, but in this phase we also plan to review document standards for care transfers used in other parts of the world to avoid needless re-invention.

Dr Philip Scott

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Chair, HL7 UK

References

HSCIC & AoMRC. (2013). Standards for the clinical structure and content of patient records. Available from: https://www.rcplondon.ac.uk/resources/standards-clinical-structure-and-content-patient-records

Scott, P. J., Bentley, S., Carpenter, I., Harvey, D., Hoogewerf, J., Jokhani, M., Kalra, D., Kay, S., McNicoll, I., Bridgelal Ram, M., Siddiqui, R., Wallhouse, R. & Worden, R. (2015). Developing a conformance methodology for clinically-defined medical record headings: A preliminary report. Eur J Biomed Inform, 11(2).

by René Spronk

International FHIR Developer Days in Amsterdam

The HL7 FHIR Developer Days 2014 have been very well received. Over 70 participants from 20 countries, mainly from Europe, attended the three day event in Amsterdam to learn more about FHIR and to build applications themselves in FHIR.

The members of the FHIR core team (also known as the "FHIR Chiefs") – Ewout Kramer, Lloyd McKenzie en Grahame Grieve – were all present. Others, including James Agnew (from Canada, known for the HAPI toolkits) and René Spronk (Ringholm) presented tutorials. They also attended the hackathon to answer questions. For the participants, it was an exceptional opportunity to learn and to ask questions – given that both the core team that created the FHIR specification as well as the authors of the three most comprehensive FHIR test servers (Ewout's .NET API, Grahame's Java API en James' HAPI) were present during the three day event.

Very good with very detailed information on FHIR...

Participant at the FHIR Developer Days 2014

The quality of the educational track was perceived to be high. Next to presentations aimed at making participants familiar with FHIR as much as possible, there were also presentations on the capabilities of FHIR. An example was 'SMART on FHIR' by Scot Post van der Burg, which offered many new insights, ideas and much inspiration. The session on DICOM was also very useful, as experts on both FHIR and DICOM were present. They demonstrated that DICOM can be used within FHIR.

The participants of the FHIR Developer Days exhibited a true community spirit. They did this not just by assisting each other in helping to resolve issues during the hackathon, but also by participating in the photo shoot for the "FHIR Chiefs Calendar 2015". You can get hold of the calendar by attending one of the upcoming HL7 events.

This year's FHIR Developer Days are planned for 18, 19 and 20 November 2015 in Amsterdam. There will be three tracks this year: a hackathon, an educational and a 'user community' track. The hackathon and educational tracks are subdivided into beginner and advanced tracks. The beginners track for the hackathon will feature a round table with tutorials and intensive coaching. The 'user community' track (new in 2015) intents to offer a platform for the sharing of implementation experiences and best practices in a series of twenty minute presentations. If you want to share your own implementation experiences, please contact r.mulders@furore.com.

René Spronk, Ringholm BV

HL7 FHIR Developer Days 2015

18, 19, 20 November 2015 in Amsterdam.

Please visit fhir.furore.com for additional information.

Crossing the Trillium Bridge at HIMSS 2015

by Catherine Chronaki

This year at HIMSS2015 in Chicago, Trillium Bridge demonstrated the technical feasibility of discovering the patient summary of a European from the Electronic Health Record system (EHR) of Kaiser Permanente NorthWest reaching out to four European Union Member States using IHE profiles. Three Member States, i.e. Spain, Portugal, and the region of Lombardy in Italy are members of the Trillium Bridge consortium, while for eSante, the national eHealth program of Luxemburg, the whole exercise was "a walk in park", since most issues had already been resolved with Spain.

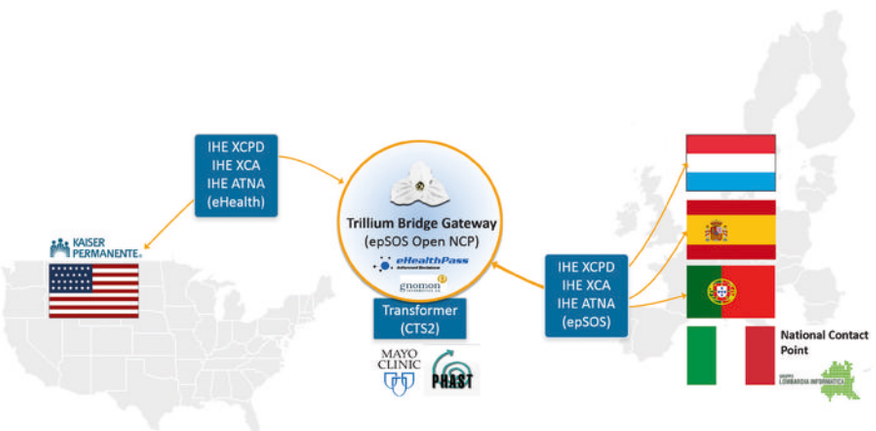
After retrieving and transforming Paolo's patient summary from the EU patient summary guideline format based on epSOS to the HL7 Consolidated CDA/ CCD format adopted by the United States Meaningful Use program, both the original and the transformed summary were made available to the physician at Kaiser Permanente's EHR. Similarly

the eHealth portals at the Ministry of Health Spain, SPMS, in Portugal, and eSante in Luxemburg, were able to discover, retrieve and tansform the patient summary of Martha, an American cancer survivor that had to cope with an unplanned care, while in Europe. The transformation was made possible with Mayo Clinic's transformer using the semantic mapping service of Phast, France in the Trillium Bridge Gateway. The Trillium Bridge gateway has been implemented in partnership with eHealthPass, an initiative of Gnomon Informatics.

The Trillium Bridge stand was at the HIMSS Interoperability showcase, in the Federal Health Architecture area sponsored by the United States Office of the National Coordinator for Health Information Technology. Virginia John of Kaiser Permanente and Giorgio Cangioli, Project Manager of Trillium Bridge demonstrated the request, retrieval and transformation of the patient summary of Paolo Cerruti to Karen de Salvo, National Coordinator for Health Information Technology, who congratulated the team and expressed interest in the transcoding/translation details of the patient summary transformation.

The transformer, created by Harold Solbrig in Mayo Clinic on top of the STS terminology service offered by PHAST in France, transforms the structure and the value sets associated with specific sections of the patient summary to make them fit for use, depending on the direction applied either in the United States or in Europe. The transformer optionally uses Microsoft Bing to suggest translations to entries that are not yet mapped.

Zachary Gillen, Director of Technology for Health Information Exchange at Kaiser Permanente, presented an introduction to Trillium Bridge at the Continuity of Care/ HealtheWay booth on Tuesday the 14th of April. In his presentation he explained how the same IHE profiles and transactions used by Healtheway in Health Information Exchanges around the United States, with only minor modification can be used across the Atlantic. Zach also referred to the major hurdles of exchanging patient summaries across the Atlantic, namely: certificates, SAML assertions, patient and EU Member state identification in patient query, as well as document type identification at document query and retrieval. "Thanks to Trillium" he notes future specification can be more harmonized and patient summary exchange at least technically, will be less daunting for companies that wish to develop solutions that can work on both sides of the Atlantic.



In a Trillium Bridge education session at the HIMSS Interoperability showcase, Catherine Chronaki (HL7 Foundation) explained the vision and prospects of Trillium Bridge and how it fits with the national eHealth Strategy of Spain, Portugal and the European commitment to large-scale eHealth deployment. Harold Solbrig (Mayo Clinic) laid out the mechanics of the Transformer urging developers to pick up the code, use it and improve it. Then, Alex Berler of Gnomon Informatics, reflected on what the Trillium Bridge services mean in terms of innovative business models applicable to global travelers, expatriates and tourists.

HL7 Foundation:
Catherine Chronaki
Giorgio Cangioli

Kaiser Permanente:
Jamie Ferguson
Kevin Isbell
Virginia John
Zachary Gillen

Gnomon:
Kostis Kaggelides
Alexander Berler
Kostas Karkaletsis

Mayo Clinc:
Harold Solbrig
Christopher Chute
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Phast:
Nicolas Canu
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Franck Gener

IHE Europe:
Karima Bourquad
Charles Parisot
Eric Poiseau

Spain:
Arturo Romero
Juan Pablo Martinez
Iciar Abad

Luxembourg:
Heiko Zimmerman
Herve Barge

Italy:
Marcello Melgara

Portugal:
Henrique Martins
Arlete Monteiro
Alexandra Cabral
Alexandre Santos
Licinio Kustra Mano
Rui Alves

Lantana:
Liora Alschuler
Russ Hamm
Sarah Gaunt
Zabrina Gonzaga

Eurorec:
Dipak Kalra

Stephen Kay

Atrius Health FOUNDATION
Larry Garber

Smart EHR:
Elaine Blechman

On Wednesday May 15, Catherine Chronaki, Henrique Martins and Alex Berler presented to a Brazilian delegation of CIOs and business people. In the discussion that followed there were thoughts on further expanding and elaborating the Trillium Bridge concepts in a project similar to epSOS for MercoSur and for the Summer Olympics 2016 in Brazil.

Looking forward to the future, a global patient summary standard could leverage the highly rewarding EU/US cooperation in Trillium Bridge that has been open, collaborative and synergistic, prompt and effective, supported by tools and endorsed by several governments around the world. Such an achievement would unleash tremendous opportunities for clinical research, education, as well quality and safety in health care. In the end, standards are just a measure of our shared understanding, and interoperability can be a safety net no matter where we live or happen to be at a certain time on earth!

Many thanks to an amazing transatlantic team!

For more information: www.trilliumbridge.eu ; euoffice@HL7.org

Deutschland fhir't* // Germany celebrates

by Simone Heckmann

After watching the development of FHIR® with a mixture of curiosity and suspicion for quite a while, in the past months, Germany brought forth a remarkable number of early adopters of HL7's yet unborn child.

A synopsis

In October 2014 Germany's HL7 Affiliate, HL7 Deutschland e.V., introduced the new standard to the community by inviting Ewout Kramer as a guest speaker to its annual meeting in Kassel where his FHIR introduction was received with great interest.

Only a month later, the "FHIR Hack-a-thon" in Amsterdam saw a group of German implementers from different companies prodding and poking FHIR Resources.

Around the same time, Health-Comm GmbH (Munich) started prototyping a Cloverleaf based HL7 V2/FHIR Integration Engine.

Students of Medical Informatics in Heilbronn/Heidelberg are currently taking FHIR to the test for the second time.

While last semester's students analyzed the implications of passing around patient demographic data from an HL7 V2 system to an Integration Engine, to a FHIR server, to a FHIR client and all the way back, in this semester they will evaluate the use of FHIR to support microbiology workflow by prioritizing lab orders whenever patients are being moved to critical care.

In March, shortly after sharing their insights about the use of FHIR based Terminology Services on Grahame Grieve's Blog (www.healthintersections.com.au), Fraunhofer FOKUS demonstrated a FHIR based portal for the German Electronic Notification System for Infection Protection (DEMIS) at the "Interoperability Forum" in Berlin.

Both the projects OR.NET (Secure Dynamic Interfacing For Surgery) and the German Doctor's Association's Patient Centered Medication Plan are currently evaluating the use of FHIR for their purposes.

In the meantime, HL7 Germany moved forward to officially support FHIR implementers by offering assistance with nationalization and regionalization via their Technical Committees.

After a major relaunch earlier in April, HL7 Deutschland's homepage offers a brand new site giving an introduction to FHIR that will also act as a landing page for the German community (**www.hl7.de/fhir**).

The watchblog **www.fhirabend.de** gives an complementary overview and regular updates on FHIR activities in and around the country.

With both Health-Comm GmbH and Fraunhofer FOKUS presenting their work at the FHIR Connectathon and AID user group meeting in May in Paris, Germany keeps up the pace.

HL7 Deutschland e.V. is looking forward to new and exciting FHIR projects (…and more puns*) emerging in the future and is dedicated to offer support and guidance to all interested partys.

Simone Heckmann

Technical Committee Lead "Messaging and V2", HL7 Germany

Health-Comm GmbH, Germany

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*The German pronunciation of "Fhir" and "Feier" (= Celebration) are homonymous.

International HL7 Interoperability Conference (IHIC) in Prague

by Libor Seidl and Bernd Blobel

The International HL7 Interoperability Conference (IHIC) 2015, excellently hosted by HL7 Czech Republic with some support of HL7 Austria, HL7 Germany, and HL7 Switzerland, has been performed from 9-11 February 2015 in the beautiful Czech capital Prague. This event was the 15th in a series of successful international conferences addressing the objectives HL7 stands for globally.

IHIC has been inaugurated in 2000 by HL7 Germany with its unforgettable Chair Joachim Dudeck, who organized the first HL7 International Affiliates Meeting in Dresden. Since, the meetings have been realized in Europe, North and South America, Asia and Australia. Many of us certainly remember the recent venues.

Contrary to HL7 Working Group Meetings where interoperability standards are specified, the IHIC events are dedicated to share experiences about national and even cross border implementations of HL7, but also to evaluate HL7 specifications against alternative solutions, investigate in standards harmonization as well as future directions and needs, new principles, methodologies, and tools. By that way, IHIC events address practitioners and scientists as well.

Contrary to former events, IHIC 2015 has started with a full tutorial day all attendees could register for free. The tutorial Monday offered 12 tutorials and served 48 attendees in 134 visits. By this way, knowledge sharing about HL7 and interoperability standards, solutions, methodologies and tools should be facilitated.

The IHIC 2015 itself has attracted 58 attendees from 14 countries from Europe, North and South America as well as Asia. Starting with a Keynote by the CEO of HL7 International, Charles Jaffe, the topics embraced this year local, regional or national Electronic Health Records solutions, concepts and frameworks for Smart Interoperability Infrastructure Services, joint HL7 and IHE implementations at regional and national level, and traditionally also the session “Show me your CDA”.

The best contributions to IHIC, selected in an independent international review process, have been published as Special Issue of the European Journal for Biomedical Informatics and are available at http://bit.ly/1KIHrXj. All the other contributions accepted by the Program Committee have been included in the IHIC 2015 Proceedings and can be downloaded at http://bit.ly/1GLKfiq. To retain experience presented in implementation reports, speeches have been recorded and will be available on the conference website.

After Joachim Dudeck has passed away in 2009, the Joachim W. Dudeck Award has been established and first awarded in 2011. With this prize, young scientists are recognized for outstanding achievements

Recent venues of IHIC conferences:

Reading (UK), Melbourne (Australia), Daegu (Korea), Acapulco (Mexico), Taipei (Taiwan), Cologne (Germany), Auckland (New Zealand), Hersonissos (Crete, Greece), Kyoto (Japan), Rio de Janeiro (Brazil), Lake Buena Vista (USA), Vienna (Austria), and Sydney (Australia)

in the development and implementation of HL7-based interoperability solutions and the promotion of the use of HL7 and its harmonization with other standards. Also this year, an international jury has assessed the contributions submitted and presented to the IHIC by young authors. The Joachim W. Dudeck Award winner 2015 is Marten Smits from Amsterdam, the Netherlands, as responsible author of the submission "A comparison of two Detailed Clinical Model representations: FHIR and CDA". The paper can be found at http://bit.ly/1FDNfS2.

As a specific highlight of the conference, the social event has happened in the Nebozizek restaurant on the Petřín hill, offering excellent local food and serving a spectacular view on the old town of Prague as well as on the Prague Castle.

The attendees of IHIC 2015 expressed unanimously their appreciation of the event. So we would like to thank the local organizers including their entire staff, the Charles University Prague as well as Jana Zvárová as Editor in Chief of the EJBI for their excellent work.

Ing. Libor Seidl and Prof. Dr. habil. Bernd Blobel

by Brane Leskošek

New Affiliate: HL7 Slovenia

HL7 Slovenia affiliate was established at the end of 2014 as a section of Slovenian Medical Informatics Association (SDMI).

HL7 Slovenia and SDMI address the same medical informatics community and see a lot of benefit in close collaboration. The goal of HL7 Slovenia is to connect all the stakeholders in the standardization of health information systems and to promote and facilitate the establishment of reliable and practically useful national health information standards (normative documents, regulations, recommendations, etc.) for the exchange, management and integration of data that support the treatment of patients and provision of other healthcare services.

HL7 Slovenia will help to establish flexible and cost-effective conditions, standards, guidelines, methodologies and similar services that bring interoperability, localization, compatibility and effectiveness of health information systems and electronic health records (EHRs). In the year 2015 the survey about national priorities in medical informatics standards and two local meetings are planned. First meeting planned for June 2015 will be generally informative and second meeting planned for October 2015 will be on specific topics based on priorities of survey's results.

For more info about HL7 Slovenia see http://www.sdmi.si/sl/hl7.html.

B. Leskošek

Researcher/teacher at Institute of Biomedical Informatics, Faculty of Medicine, Ljubljana

Chair of HL7 Slovenia

Calendar of Events

HL7 Working Group Meeting	Paris, France	**10 to 15 May**
eHealth Week	Rīga, Latvia	**11 to 13 May**
MIE (Medical Informatics Europe)	Madrid, Spain	**27 to 29 May**
MEDINFO 2015	São Paulo, Brazil	**19 to 23 August**
29th HL7 Annual Plenary & Working Group Meeting	Atlanta, GA, USA	**4 to 9 October**
Annual Meeting and National Interoperability Conference HL7 Germany and IHE Germany	Kassel, Germany	**21 to 23 October**

HL7 Training schedule / Developer Days

Standards Summer School Webinars: Introduction to Clinical Document Architecture	@online	**8 to 9 June**
Standards Summer School Webinars: Advanced CDA	@online	**10 to12 June**
International FHIR Developer Days 2015	Amsterdam, The Netherlands	**18 to 20 November**

HL7 Affiliates in Europe

see also http://www.hl7.org/Special/committees/international/leadership.cfm

HL7 Austria http://www.hl7.at Chair: Stefan Sabutsch	HL7 Greece http://www.hl7.org.gr Chair: Alexander Berler	HL7 Slovenia Chair: Brane Leskosek EE, PhD
HL7 Croatia http://www.hl7.hr Chair: Miroslav Končar	HL7 Italy http://www.hl7italia.it Chair: Stefano Lotti	HL7 Sweden Chair: Mikael Wintell
HL7 Czech Republic http://www.hl7.cz Chair: Libor Seidl	HL7 The Netherlands http://www.hl7.nl Chair: Robert Stegwee MSc, PhD	HL7 Switzerland http://www.hl7.ch Chair: Marco A. Demarmels MD, MBA
HL7 Denmark Chair: Gitte Meltofte	HL7 Norway http://www.hl7.no Chair: Line Saele	HL7 Turkey Ergin Soysal MD, PhD
HL7 Finland http://www.hl7.fi Chair: Juha Mykkanen PhD	HL7 Romania http://www.hl7romania.ro Chair: Florica Moldoveanu	HL7 UK http://hl7.org.uk Chair: Philip Scott PhD
HL7 France Chair: Nicolas Canu	HL7 Russia Chair: Sergey Shvyrev MD, PhD	
HL7 Germany http://www.hl7.de Chair: Christof Gessner	HL7 Spain http://www.hl7spain.org Chair: Francisco Perez	

About HL7 International

Founded in 1987, Health Level Seven International (www.HL7.org) is the global authority for healthcare Information interoperability and standards with affiliates established in more than 30 countries. HL7 is a non-profit, ANSI accredited standards development organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services. HL7's more than 2,300 members represent approximately 500 corporate members, which include more than 90 percent of the information systems vendors serving healthcare. HL7 collaborates with other standards developers and provider, payer, philanthropic and government agencies at the highest levels to ensure the development of comprehensive and reliable standards and successful interoperability efforts.

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