



Connected data

### Insights #1

The 7 deadly sins of Information  
Handover Specification!



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# 1 Introduction

## 1.1 Background

**1.1.1** Author Lin Whitworth has confronted information challenges on major capital projects for companies including BP, Encana and Nexen for over thirty years. During that time he experienced success but also the frustration of witnessing the same mistakes, oversights and inability to implement lessons learned. Lin brought his considerable knowledge and experience gained to the Datum360 family in 2012 to build a team of like-minded experienced and pragmatic information management professionals. This team extends the value of the Engineering Information Management platform by embedding staff to aid and in some cases mediate a process to expedite the understanding of all participants with respect to the Information Handover Specification in place for a given contract.

**1.1.2** Author Matt McKinley has worked for many software vendors during a twenty-year odyssey starting as an Autodesk value added reseller, through positions with Intergraph, AVEVA, MatrixOne and most recently at two Siemens owned software businesses COMOS and XHQ. He has participated and observed in business product strategy, where the continuing themes of system data compatibility has been a recurring topic. His arrival at Datum360, the agnostic

cloud based class library and Engineering Information Management platform experts, is no coincidence. He worked with founding owner CEO Steve Wilson at Intergraph UK, where the first generation engineering data warehouse (EDW) was being evolved. 18 years later Industry is still searching for the solution and he believes that Datum360 have the answer.

**1.1.3** Datum360 have evolved from a specialist data consulting practice, to build a pioneering Cloud based Engineering Information Management (EIM) platform that was launched in late 2012. They have experience of building Master Class Libraries<sup>1</sup> for 4 of the Top 6 IOC's (International Oil Companies) in the world, hosting Master Engineering Information Repositories on the PIM360 platform being accessed through design, construction, commissioning, start-up and beyond to operations and maintenance.

Note1: Class Library is a term commonly used to described the reference data classification used by organizations to provide uniform naming structure of "things" (equipment, functions, locations, configurations etc.) that may be required for use in more than one system or at more than one asset that work to drive consistency and understanding.

## 1.2 This Document

- 1.2.1** The purpose of this document is to provide an insight to the potential consequences of poorly constructed Information Handover Specification (IHS).
- 1.2.2** Project stakeholders who are removed from the day to day project activities, associated with establishing a trusted digital asset, can unknowingly set the course for shortcomings with respect the quality and completeness of Engineering Information. This document should help project stakeholders better understand the consequence of their actions and provide some strategies to improve outcomes.
- 1.2.3** The current approach to IHS is often an undervalued component of success. Over time if left unaddressed a poorly produced specification will have negative impact throughout the future life of an operating facility.
- 1.2.4** This document is produced to recognise the continuing market challenges, offering observations and recommendations independent of Datum360 technology capabilities however it goes without saying that we welcome the opportunity to demonstrate our ability to accelerate the “Speed of Trust™”

Note2: The Speed of Trust™ published in 22 languages since 2006, author Stephen M.R. Covey introduces the principle of Self Trust™ and the related 4 Cores of Credibility™ as well as Relationship Trust™ and the 13 Behaviors of High Trust™.





# 2 Information Handover Specification for non-IM's

## 2.1 Introduction

### 2.1.1 What is an IHS?

An Information Handover Specification (IHS), sometimes called an Engineering Handover Specification (EHS), is an official contract addendum in the tender documentation.

The IHS is the vehicle where the business owner sets forth expectations of the Information requirements that “MUST” be delivered as part of the execution phase of the project by its suppliers and in some cases stating when the deliverable is scheduled for exchange.

This specification typically takes the form of word documents or excel spreadsheets, in some cases these can be issued as scanned or pdf documents of originally electronic materials that make searching the specification more arduous than is warranted.

Very rarely is the specification provided in a searchable online form, let alone providing a set of validation tools that would help implement tag and/or document numbering requirements.

### 2.1.2 What is an IM?

An Information Manager (IM), sometimes known as a Technical or Project Information Manager (TIM or PIM) has the responsibility for the following areas:

- + Development and Management of an organisation’s Information Management Strategy.
- + Stewardship of an organisation’s Information Management specifications
  - + Tag Numbering Specification
  - + Document Numbering Specification
  - + Information Handover Specification
- + Communicating the strategy and specifications to all stakeholders and provision of resources to execute the strategy, people, processes and technology.



### 2.1.3 Why do they exist?

The IHS serves a number of purposes but most commonly;

- i) For all it should be a clear unambiguous statement of the engineering data required for the life cycle of an asset.
- ii) For the owner and contractor it acts as a vehicle to measure supplier performance with respect completeness and accuracy of the information requested against that delivered.
- iii) For contractors and or suppliers after initially acting as a guide for work package assignment, it becomes the tool to secure a payment milestone for successful completion.
- iv) In the unfortunate but not uncommon event the IHS will become the baseline guide for disputes with respect to the delivery of the digital content specified.

### 2.1.4 Why do companies routinely overlook the importance of this topic?

**Clients:** can for many reasons make the mistake of under-estimating the importance of an IHS, perhaps the Information Manager is inexperienced, without organizational influence or complacent that suppliers / contractors will know what to do. Or in other cases the focus of the Owner CAPEX team is prioritised to immediate near term goals of construct, commission and start-up.

The concerns for operate and maintain, plus the lifecycle data that would enhance this phase, are sometimes viewed as the domain solely of the OPEX team that will inherit the asset in due course. The dynamic between the CAPEX and OPEX team on the owner side plus the relationship with the supplier responsible for delivery of the digital asset is essential to the outcome, and if anyone of these three parties is absent or dominant the emphasis can be distorted.

In some cases there is also a disconnect between client project team and client operations team with both looking for the EPC to arbitrate the disconnect for them (which is not the EPC remit).

**Suppliers:** During the bid process, contractors will typically bid based on estimates and assumptions of past engagements, so they might incorporate a standardized % budget to accommodate IT/IM requirements. Very rarely do the suppliers engage an IM specialist as part of the bid team, where clarification statements might help a client adjust a requirement to make a cost saving. Also, there is not an International Oil Company (IOC) "standard" for an EPC to baseline bid to or that would remove the impact of responding to differing standards for the same client from project to project.



## 2.2 What is industry doing about it?

### 2.2.1 Standards bodies in general.

Over the past 20 years' numerous initiatives have driven industry specific standards for data exchange and interoperability. Each standard might have multiple sub-elements, for example ISO 15926 has eleven parts covering specific areas deemed by the member participants as essential for the implementation and maintenance of the standard for practical use.

The intent of these standards bodies is to provide a so-called "common language" to unify communication and understanding of humans and machines in specific areas of interest associated with capital intensive projects.

As seen from the examples below general standards, can branch to sub-committees due to perceived regional differences or, drop to focus groups that have prioritised the need to address a specific lifecycle stage or market solution, such as Asset Lifecycle Management, or Control System Automation.

ISO 10224 / ISO 15926 / EN 81364 / IEC 61987 / Etc

Clearly when industry aligns there is an opportunity for significant cost reduction through redundancy of effort and the costs associated with transference of data between non-native systems.

In 2004 NIST GCR 04-867, prepared for NIST by RTI International and the Logistic Management Institute, estimated the cost of inadequate interoperability in the U.S. capital facilities industry to be \$15.8 billion per year.

These cost impacts are of interest to owners and operators of capital facilities; design, construction, operation and maintenance, and other providers of professional services in the capital facilities industry; and public- and private-sector research organizations engaged in developing interoperability solutions. The standards approach and Information Handover Specifications would move somewhat to capturing this value.



The challenge is that first you need industry to align, when the splintering to smaller more focussed sub-committees can increase progress but take more time. Then the time and effort to proceed down the path of official standards organizations and the support required to maintain momentum of adoption requires political skills and fund raising abilities that can sometimes hamper progress.

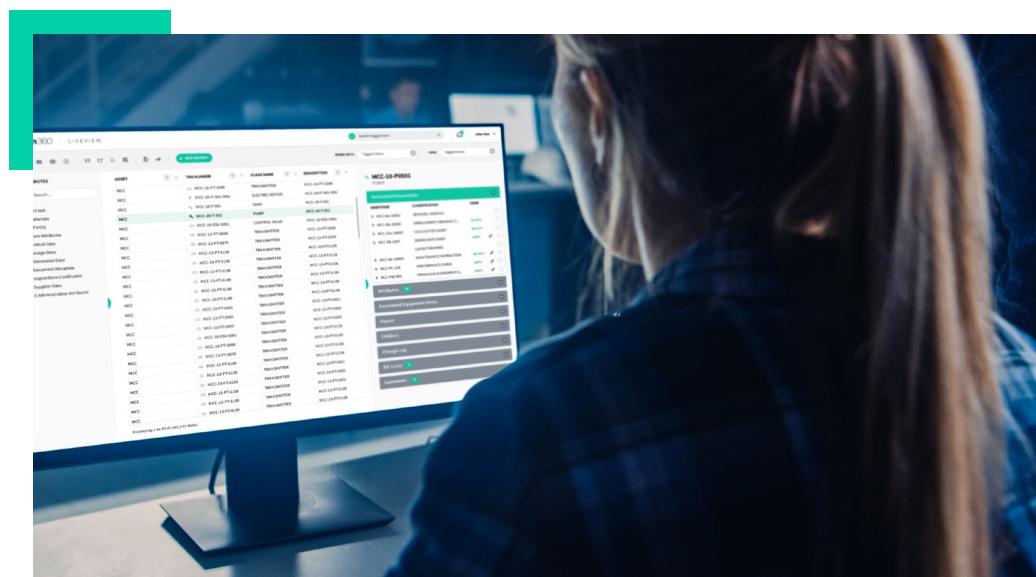
**2.2.2** Capital Facilities Information Hand-Over Specification (CFIHOS) project is an industry initiative being coordinated by the International Association of Oil and Gas Producers (IOGP).

The CFIHOS project started in 2012. A group of interested parties including; AmecFW, BP, Chevron, DSM, EDF, Fujitsu, IMPEX, Mitsubishi, Shell and Toshiba; formed a core team. The intent is to refine and agree what constitutes a pragmatic usable Information Hand Over Specification with a supporting Reference Data Library, which an owner operator might use as a starting framework to engage Capital Project supply chain vendors.

The CFIHOS project has built on the engineering information specification, as developed by the Owner Operator Shell, who have already been using this specification for around ten years to specify the information they wish to see

handed over by the contractor to populate their O&M systems. Their request to IOGP is to widen the spec into an industry specification standard.

To ensure practicality of the project approach, a de-facto CFIHOS industry standard has been created and reviewed in practice. This standard is now in process of being implemented in industry. Once the CFIHOS standard has been enriched with missing elements as found by the project partners, it will be proposed as ISO 15926-10X standard under TC 184/SC 4/WG 3.





Setting an industry standard for this specification has several advantages for each of the major stakeholders:

**Owner Operators** - an industry recognized standard would reduce the effort required to specify and communicate the information requirements to the supply chain leading to lower costs. It will also become more advantageous to move from company standards with high cost of maintenance to international ISO standards. Also the cost of mapping the handover information to the current systems of operation, engineering and maintenance will be reduced.

**Contractors** - a consistent approach to information handover requirements from Owner Operators would allow Contractors to integrate the information requirements into their corporate business processes and systems resulting in more efficient delivery and improved quality of the information. Currently Contractors are issued different requirements for each project or are expected to propose what should be delivered and how.

**Equipment Suppliers** - similarly to Contractors, a standard definition of information requirements would provide suppliers with a consistent view of requirements enabling the information to be generated once and reused.

**Software Vendors** - a clear definition of the core information requirements would provide clarity in the functionality needed by the industry in the tools that they develop.







# 3 The 7 deadly sins of an IHS

## 3.1 #1 Pride – being too self satisfied

**3.1.1** The observed behaviour might present a tendency of over confidence, arrogance or delusion that everything is already covered or is known to the author/owner of their Information Handover Specification. This might include ignoring or avoiding the input of others, perhaps excluding the voice of the owner operator, supplier or consumer of the information to be covered.

**3.1.2** The consequence: missing an opportunity to create clarity on verified (not assumed) needs and hence to improve performance, gain insight from lessons learned, to correct requirements based on the experiences of those more closely involved in the generation or use of the data.

**3.1.3** It can take a lot of time and energy to develop an IHS, but much more energy to maintain it in response to new changes in requirements. Sometimes the response to this can be to put the IHS in glass box for all to see, but to weld the lid of the box so that the IHS cannot be changed. The IHS falls into disrepute if it is not a living and responsive specification.

Today the revision of an IHS can be supported by elegant cloud based tools that allow the owner to maintain an up to date IHS with ease at low cost and without IT support, so there is no excuse to believe that you've solved the problem and don't need to maintain this valuable tool when the projects and environment are constantly changing.



## 3.2 #2 Envy – wanting what someone else has

**3.2.1** In this instance an author/owner might become fixated on the requirements specified by a competitor or former company. Maybe deferring to an unknown, alleged or assumed industry specification. Looking to follow the lead with an identical IHS, without consideration for the needs of their unique business.

**3.2.2** The consequence: When following others blindly you leave yourself exposed to issues that occur as a result of the differences not considered for your specific business. This means you miss the opportunity to take active responsibility for your needs and make better decisions on what is truly needed.

**3.2.3** Information Managers should be the stewards of the IHS. The content of the IHS is owned by engineering, compliance, maintenance, commissioning amongst others. Part of the Information Manager's role is to engage with these ownership groups to obtain their sign off. It is our view that unless an IHS is understood and owned by the business it will be viewed as a cost rather than an enabler. You cannot under-estimate the importance of pro-active communication, so that all participants are aligned and understand the value of the IHS as well as the process to support it throughout the life of the project.



### 3.3 #3 Wrath – vindictive anger

**3.3.1** This highly emotive reaction can commonly present itself as a result of past bad experience or poor performance, with two potential outcomes namely; i) we tried this before and it didn't work, so we will not bother this time or ii) this time around there will be no uncertainty, the supply chain will do exactly what we want, when we want, regardless of the impact to their service.

**3.3.2** The consequence: as in life emotive/reactive decisions are not always the measured approach to reaching a pragmatic outcome. In both scenarios you might end in dispute, arguing a vague/flawed or inflexible specification. Extremes are not a good thing in an IHS to engender collaboration.

**3.3.3** Vindictive anger in an Information Manager, who'd have thought it? As in most conflicts bad communication is often to blame. It is possible that if we learned to listen rather than just hear, then the heat could be removed from Information Management. Sharing the IHS in a timely manner will provide time to socialize and explain the requirement. In our experience it is rare for the IHS to ask for any information that is not already generated by the supply chain. By sharing and discussing the IHS before the placement of Contracts and PO's all stakeholders can achieve ownership of the IHS.



### 3.4 #4 Gluttony – taking too much of something

**3.4.1** In this scenario we find author/owners that have lost sight of the “End in Mind” philosophy and have defaulted to a reactive position to discover what the supply chain is creating and to accept whatever is available without reason, need or any control regarding the minimum mandatory required attributes.

**3.4.2** The consequence: cannot see the wood for the trees and ignore or forget about your real needs. The overload of erroneous and irrelevant data, distracts the IM team from the task at hand and loses confidence from the operations team whose end in mind which is capturing high quality validated data to load the operational systems.

**3.4.3** The IHS has to be real. The details need to be owned by the business. The IHS should not be a copied document from another “job” that is deployed and then defended. It can be convenient to just ask for everything without understanding the why the data is needed. The nice to have or even irrelevant data requirement can lead to the IHS falling into disrepute. Our advice would be, do not get greedy, just ask for what you really need!





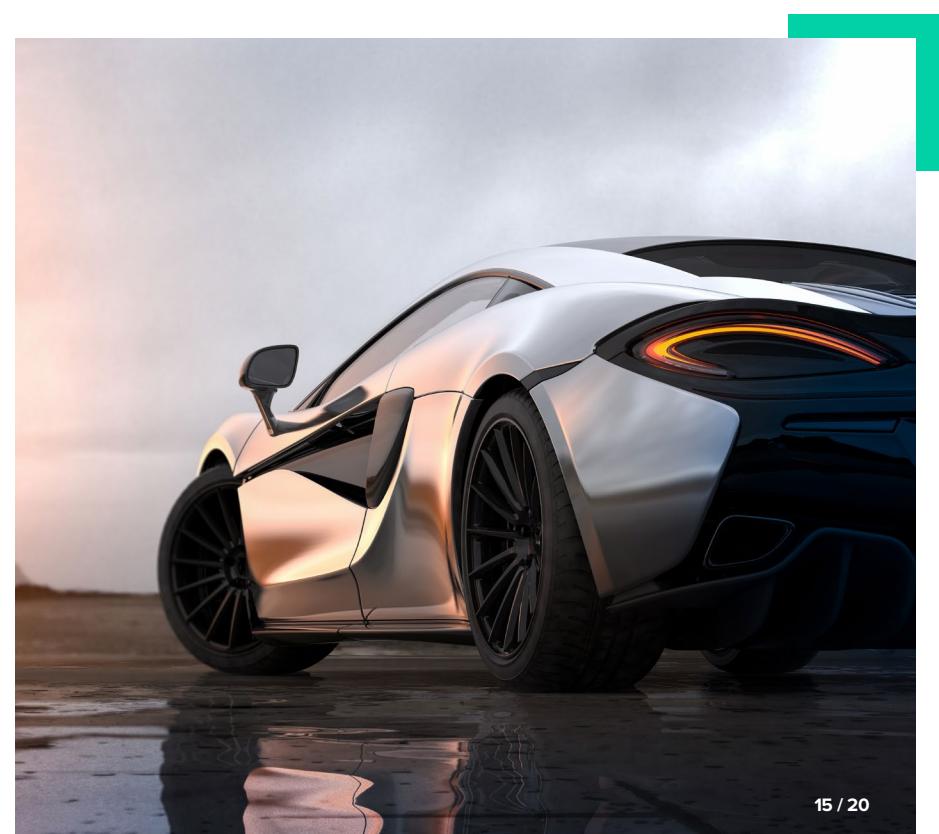
### 3.5 #5 Lust – need to fulfill desires

**3.5.1** There are similarities to the issue with Pride, however this is less about the ignorance of excluding external input, instead attempting to create an overly complex piece of work. This might include specifying systems and tools that have been previously untried, a desire to incorporate high maintenance automated interfaces that distract from the intent of collecting the data leading to an IT project rather than an IM project. This is normally on the whim of the individual without true business justification.

**3.5.2** The consequence: Scope creep becomes endemic and due to the complexity of this expanding scope, budget overrun can be significant and delays in readiness of the platform can force manual workarounds. This leads to the uncontrolled circulation of excel spreadsheets for instance as engineers try to maintain to project schedule and ‘make the best of a bad job’.

**3.5.3** Lest we forget, the IHS is a mechanism for explaining engineering information requirements. It does not specify any particular design applications or indeed the configuration of these tools. We have seen some companies be more interested in the suite of design tools to be used rather than the fulfilment of the IHS. Implementing design tools and integrating them with engineering data warehouses will consume time and money. If the IHS changes then the design

tool configuration and customisation must follow. Lusting after having your pizza delivered in a F1 car is fine but a bicycle delivery will be cheaper more flexible and just as fast given the number of support systems that an F1 car requires...plus you concentrate on the choice of toppings of the pizza rather than the mode of delivery!



### 3.6 #6 Sloth – too slow or lazy

**3.6.1** Unfortunately, this trait is far too common, as seen in the release of severely under-prepared IHS deliverables. What leads to this somewhat chaotic situation? It can start with the phrase “it is too early to worry about that right now” and end with the phrase “it is too late to do it now as we don’t have time”. Bottom line the author/owner of the IHS has simply not performed their responsibilities.

**3.6.2** The consequence: the exposure of risk leading from the absence of an IHS or a poorly specified deliverable can have significant impact in terms of increased risk, out of control costs and future issues with performance in operations.

**3.6.3** We have found that building an IHS ahead of its’ implementation separates the specifying and communicating activities. If the development of an IHS is left until it is needed, then short cuts may be taken resulting in an incomplete or poorly understood IHS being issued to the supply chain. I think that we can all agree that is not the best way to start relationships that need to thrive throughout the project life. To all of you owners out there, prepare the IHS now, if your day job does not allow you the time to do this, then please remember that this issue is analogous to fixing a small hole in a dam. If you still do not have time, then consider bringing specialists who can build the IHS with you.





### 3.7 #7 Greed – wanting too much of something

**3.7.1** The final common mistake of the IHS is wanting too much data, without knowing of a need or purpose for the collection. Common phrases abound “we ask for everything, as we expect to only get half of what we ask for?”, but what if it’s the wrong half! These specifications are normally overloaded with requests for unnecessary content. The difference between Greed and Gluttony in this list, is that Gluttony creates problems for the receiving party namely the owner, whereas Greed creates a level of demand that challenges the delivery parties in the supply chain. This demand needs to be pragmatic yet not compromised in terms of the end in mind.

**3.7.2** The consequence: driving up man-hours attempting to collect data that will never be used or is impossible to maintain. Defocussing efforts to collect and validate what is needed by operations. Creating a specification so large that it is impossible to deliver, and results in a poor completeness level that can lead to dissatisfaction and confusion in the supplier and owner relationship.

**3.7.3** Please just ask yourself or your colleagues if your organization really needs what it is requesting in the specification. Each data point needs an owner and a maintenance process to ensure that the data remains evergreen. Don’t be the person that asks for the world then hoards the results in the cellar or the loft never

to be seen let alone used. Be a collector not hoarder. Collectors understand their subject and know what they need to build a complete set of value. This completed and valuable data set is ultimately put on display to receive feedback that allows refinement and improvement of the collection over time.



# 4 Recommended Best Practices

## 1.1 Do's



**1.1.1** Start as early as possible by engaging stakeholders and suppliers!

**1.1.2** Know what you want, why you need it and have the “End in Mind”!

**1.1.3** Ensure that your specification reflects the requirement clearly!

**1.1.4** Raise awareness of specification and drive a sense of shared ownership throughout the entire business not just the IM team.

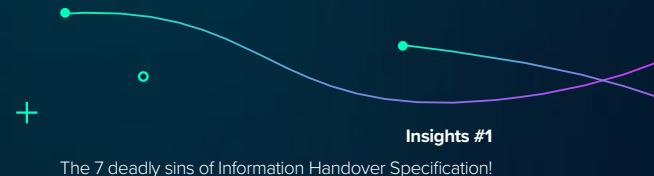
## 1.1 Don'ts



**1.1.1** Use an old specification or believe that your supply chain knows what to deliver.

**1.1.2** Wait till late in the project to remember what information is required in the contract.

**1.1.3** Over-complicate the process by focussing on project tools.



## 5 Conclusion

In summary the Information Handover Specification is a small but important element of securing the desired outcome, to build a digital asset that accurately reflects and represents the physical asset constructed then commissioned by the contracted supply chain.

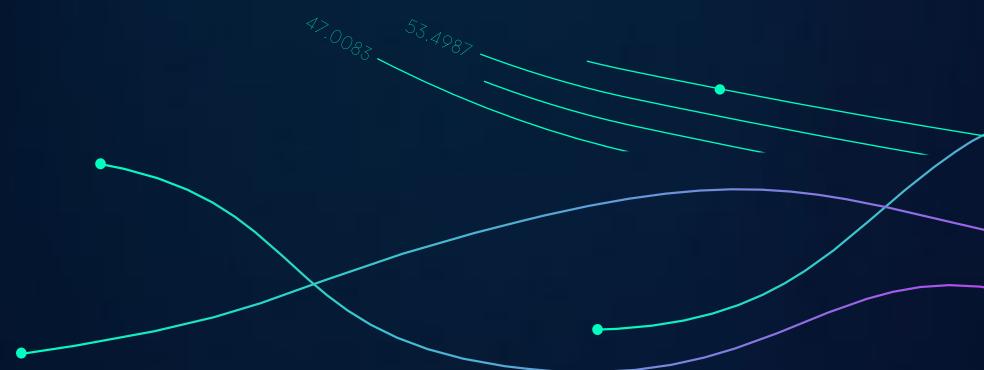
If you apply the simple recommended practices, you can avoid the pitfalls described in the 7 sins, and as an owner you will be taking a solid first step in accelerating the “speed of Trust” for your digital asset!

Other steps that can be taken have been identified by groups like USPI-NL's CFIHOS project, where something as simple as clear consistent and concise communication between all project participants and stakeholders is identified as a key target for success.

Furthermore, we believe that contribution and active engagement of stakeholders from Operations, when developing the IHS during the tender process with the Projects team and Supply Chain management staff will result in a much stronger outcome...namely a more complete and accurate information handover ready to operate the asset!

Datum360 consultants help mediate engagements between the project participants and stakeholders, using our cloud based class library system that enables the measurement and validation of received deliverables against the published IHS.

We welcome feedback on your experiences and observations that can help us add to our catalogue of use cases that support the 7 deadly sins of Information Handover Specifications.





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