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물분야

# QGIS plugin 개발 회고 (애자일, 오픈소스 관점)

원영진 (HermeSys)

FOSS4G Korea ( 2024.11.29 , 16:20 ~ )

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# 원영진

HermeSys CTO

Civil(Water) Engineering + Software Engineering



Basics of Disciplined Agile™ Online Course

Project Management Institute

Issued Nov 2024

Skills: Agile Project Management



Basics of Disciplined Agile™ Online Course.pdf



Spatial Data Science: The New Frontier in Analytics

Esri

Issued Oct 2024

Skills: Machine Learning · Deep Learning · ArcGIS Pro



Introducing Mapping, Spatial Data and GIS (Online)

University of Oxford, Department for Continuing Education

Issued Jun 2024

Show credential

Skills: Geographic Information Systems (GIS) · Spatial Data Management · Data Mapping



Introduction to GIS Mapping

University of Toronto

Issued Jul 2023

Credential ID YEPWRJT5C2WZ

Show credential



Fundamentals of GIS

University of California, Davis

Issued Jun 2023

Credential ID YWHQBPT9EW4G

Show credential

A long time ago in a galaxy far,  
far away....

# HyGIS 2000~2010

## 21세기 프론티어 연구개발사업

- (2001년 선정) 수자원의 지속적 확보기술개발
- 최종 목표
  - 수자원 추가확보기술개발 및
  - 수자원 분야 선진 기술력 확보(40% → 80%)
  - 관련기술의 실용화



### Numbers

50억원?

백명? 2백명?

G사의 경우 78명, 13억

# HyGIS

다수의 목표 달성(논문 등등)  
R&D 과제 성공 판정  
기술이전계약 체결



출처 : 디지털타임즈 '수자원 관리 특화 GIS 국산화 성과' (2021.9.21)

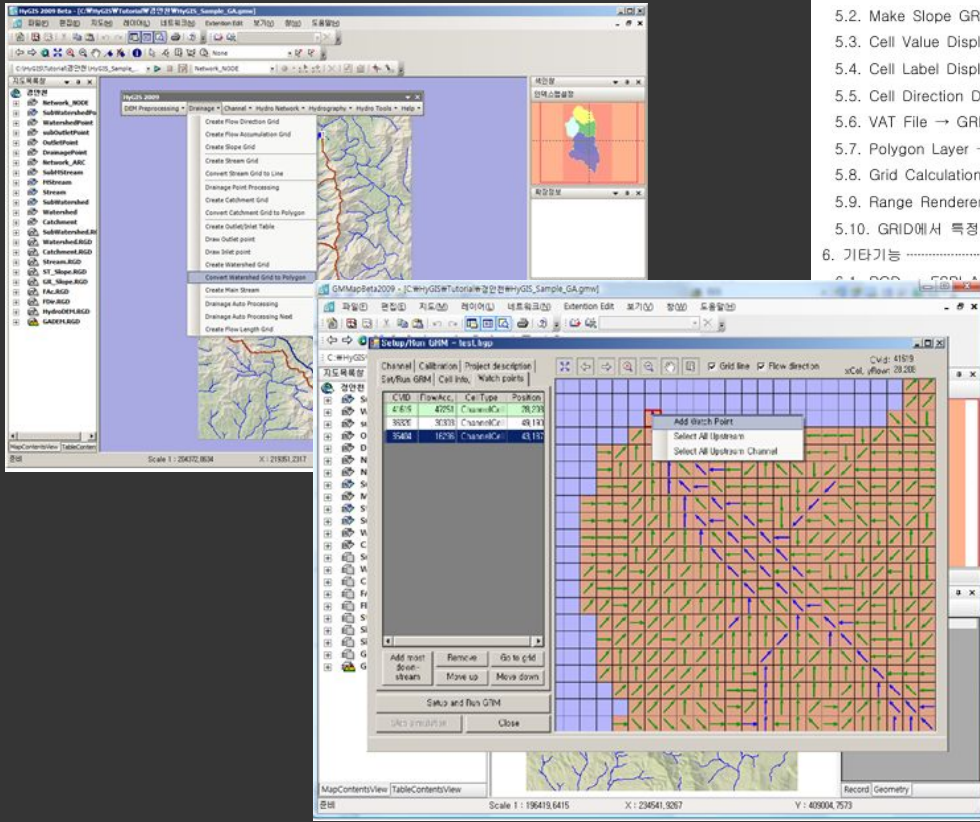
# Now?

- 기술 이전 : 실시권자 (Licensee) ← 허여자 (Licensor)
- 무상? 유상?
- 실시권자 : 제품 판매건수? (BOX, CD, ESD)
- 허여자 : KICT
- 참여기업 : (주)지오매니아

# 회고 (Retrospect, 복기)

- 전형적인 "절차적" 수행 (←→ IID 반복점진적)
- BOX 제품 배포 목표를 최종 시점을 중심으로 설정
  - 매우 힘들게, 연일 철야 작업하면서 진행
  - 대규모 (200? 300?) BOX 제작, 책자 인쇄, CD 제작 등
- 복기한다면
  - 1차년도
    - Global Desktop Tool 기반으로 POC, 핵심 기능 n개의 MVP로 수행
    - GUI 세련됨 등 완성도는 추후로
    - 사용자 대상 배포 반드시 수행
    - 1년에 한번 배포가 아닌 n번 배포
  - 2차년도
    - 월 1회 정도 반복 배포
  - 3차년 ~9차년도
    - 2주 Sprint 수준
    - Github 등 ALM
    - Cloud 기반 or Serverless
  - 10차년도
    - KANBAN continuous delivery (PMI DAD 참고)
    - 차기 사업 기획





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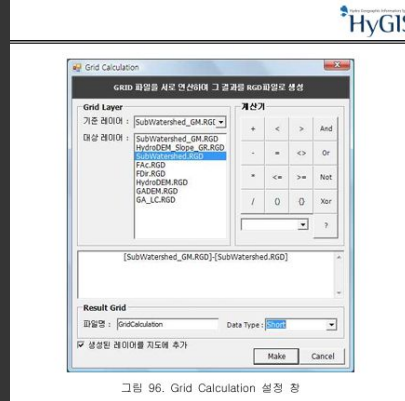
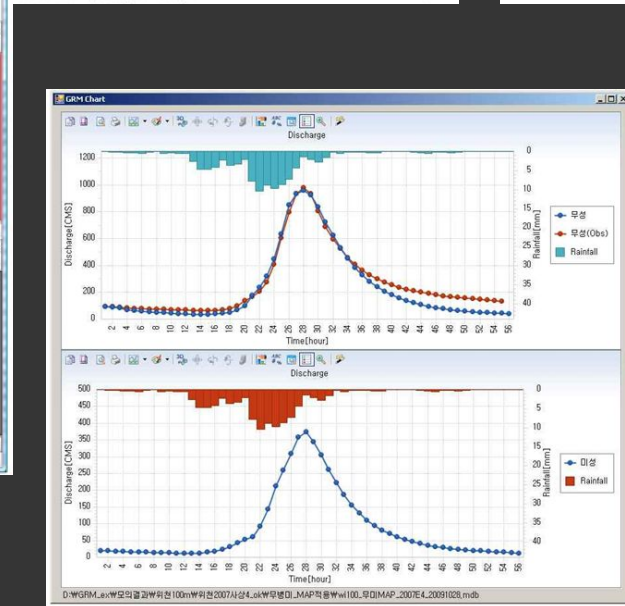


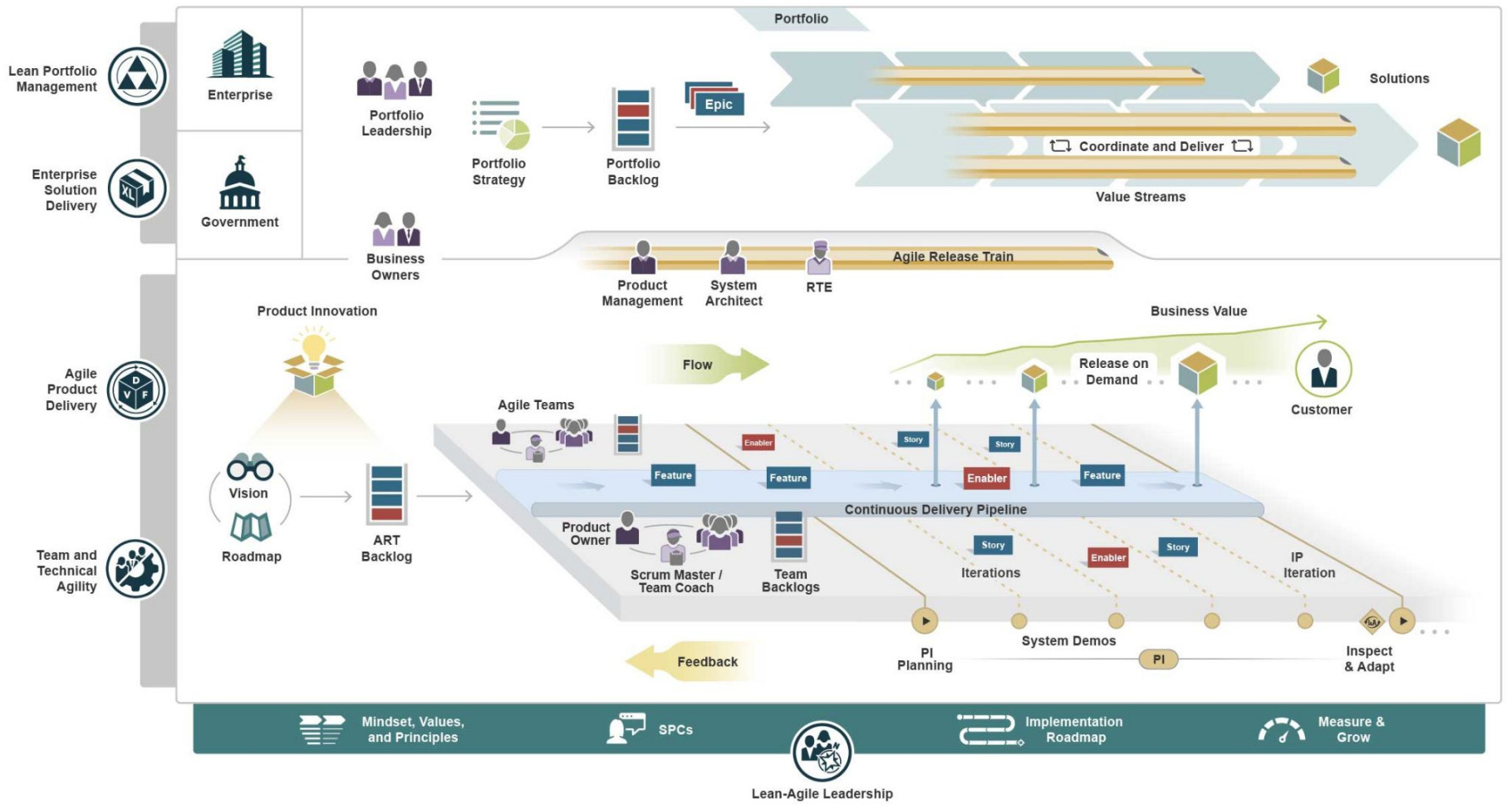
그림 96. Grid Calculation 설정 창





# Agile

- Method : XP, Scrum, KANBAN ,....
- Practices : Pair Programming, Stand up daily meeting, TDD ..
- 최근 제시 : SAFe , PMI DAD , ...



Portfolio Management



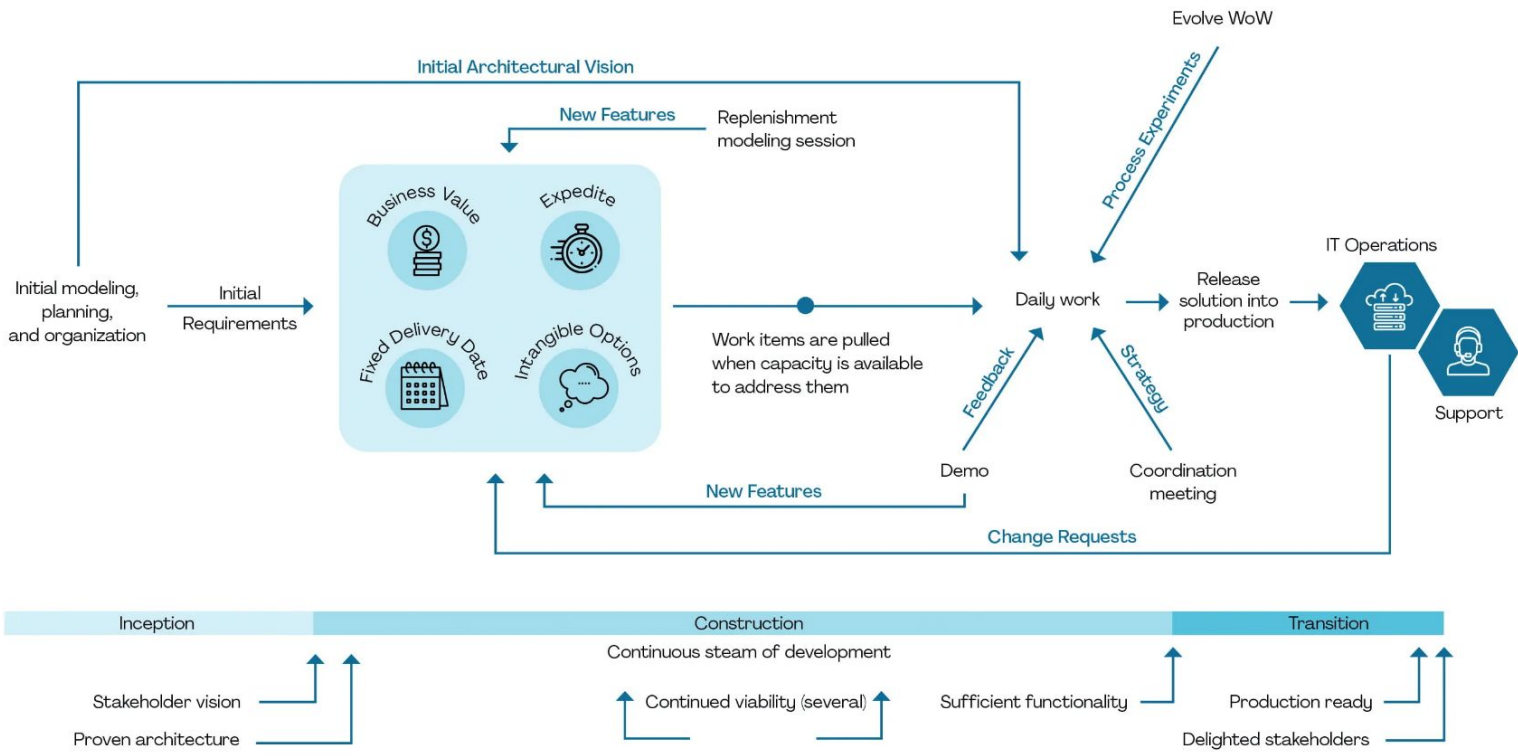
Vision and Funding

Product Management



Roadmaps & Guidance

Enterprise Architecture



# Agile

- **Iteration (Iterative Incremental Development (IID))**
  - **2001, Manifesto for Agile Software Development**
    - **Agile Alliance , <https://agilemanifesto.org>**
  - **1972 IBM used four iterations with six months , ...**
  - **1972 "TRW team developed the system in five iterations."**
  - **1960s NASA's Project Mercury did apply IID in software with very short (half-day) iterations.**
- **Meyer, B. (2014) Agile!: The Good, the Hype and the Ugly , Springer**
  - **The bad : Deprecation of documents ..**
  - **The good : Short iterations ..**

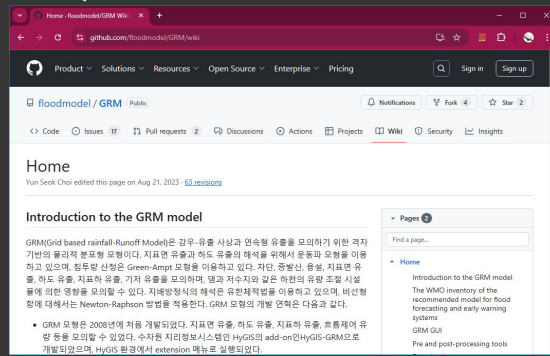
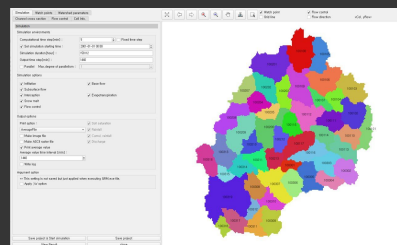
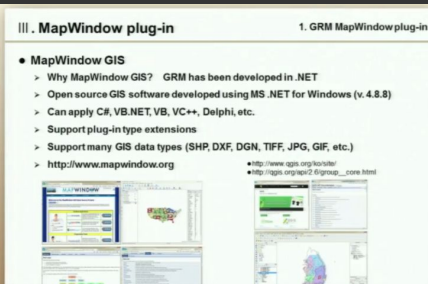
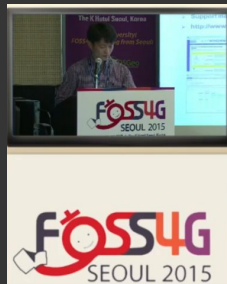
# Nothing?

- 계승된 부분

- 핵심 기술(GRM)을 오픈소스로 이전 추진(2014)
  - 분포형 강우유출 모형 (Distributed Rainfall-runoff model)
- MapWindow v4 → v5 → QGIS 2 plugin → QGIS 3 plugin 으로 제공
- pre processor + model (Flood) + post processor → open source (GitHub)
- KICT에서 지속적 유지관리중

- 특징

- 오픈소스 기반 (의존하는기술 요소도 대부분 오픈소스)
- 심리적 부담감 측면
  - 10년 성과 BOX 배포시도에서는 결함 1개만 발견되어도 No. (개발진 스스로)
  - 다시 진행 → 회귀(regression) Bug → regression TEST
- 비교적 잦은 배포, 지금은 “완벽”을 추구하기 보단. 일단 배포
- 짧은 배포의 장점은, 피드백 빠르게 받아서 개선에 참고한다 등등..
- 현재 무료 버전이라는 측면도 있음



# Huddle

- Open source 추진 과정에서의 장애물
  - Business 측면?
  - 개발로서의 부끄러움
    - Code Quality, Static code analysis : Naming Convention, Comment, Code Security ,..
    - daily night build? Unit test (Code coverage 70%? 10%?) , CI (Continuous Integration)
  - 정돈하고 open ? 일단 open?
    - 여전히 코드를 누가 보면 부끄러움
    - respect 받는 코드를 공개하고자 한다면 “영원히 못한다” → 이게 저희 조직의 결론이었음

# Now

- 2017, WMO의 홍수예보모형에 GRM 포함
- 2021, IWRA(International Water Resource Association)
  - KICT, HermeSys
- 2023, GRM Workshop
  - 수자원학회 KWRA

WORLD METEOROLOGICAL ORGANIZATION

## GRM

Summary

**Short name:** GRM

**Long name:** Grid based rainfall-Runoff Model

**Model type:** Event and continuous in time; grid based distributed in space

**Flood Mechanism:** Riverine flood, rural flash flood; rainfall- snowmelt derived

**Usage:** Short to medium range riverine flow forecasting including dam operation and sink or source stream flow.

**Special Features:** General rainfall-runoff event and continuous simulation. Stream flow analysis including dam operation and sink or source flow by pumping or conduit, etc. High resolution flood simulation for the watershed runoff and flood forecasting system.

**Background:** The GRM is a physically-based distributed runoff model using uniform square grid. The model was developed for the high resolution flood simulation of a watershed and flood forecasting system. It was first developed for the rainfall-runoff event simulation, and has been improved to enable the continuous simulation. The first version was released in 2008. The current version was released in 2022. Development is very active and all the source codes and binaries are managed and released through the open source platform, Github. QGIS plug-in(QGRM) is suggested for GRM GUI at Github.

Download hydrologic model template



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Author Name(s) : YJ Won, YS Choi  
Research Title : CTO, Research Fellow  
Institution(s) : HermeSys, KICT  
Email Address : yjwon5183@gmail.com,  
yschoi51@kict.re.kr

HermeSys KICT KOREA INSTITUTE OF CIVIL ENGINEERING AND BUILDING TECHNOLOGY

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# Thank you

**yjwon5183@gmail.com**

<https://www.linkedin.com/in/yjwon5183/>